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SIERRA CLUB BULLETIN

VOLUME TEN

NUMBER TWO

SAN FRANCISCO
JANUARY
1917

PUBLICATIONS OF THE SIERRA CLUB
NUMBER FIFTY-TWO

SIERRA CLUB BULLETIN

FOUNDED 1892

Edited for the Club by
WILLIAM FREDERIC BADÈ

JANUARY, 1917

VOL. X — No. 2

CONTENTS

Plate CLV. Head of Deer Creek Cañon — *Frontispiece*

THE SIERRA CLUB — *Joseph N. Le Conte* — 135
Plates CLVI, CLVII, CLVIII.

TO THE MEMORY OF JOHN MUIR — *C. Hart Merriam* — 146

TEN VOLUMES OF PUBLICATIONS (1892 TO 1917) — *Elliott McAllister* — 152

THE WAR-ZONE FOREST OF THE KERN — *Walter Mulford* — 155
Plates CLIX, CLX.

THE YOSEMITE CONY—A CHAPTER IN THE NATURAL HISTORY OF THE YOSEMITE NATIONAL PARK — *Joseph Grinnell* and *Tracy I. Storer* — 159
Plate CLXI.

THE SACRED MOUNTAIN OF CHINA — *Eunice Tietjens* — 165
Plate CLXII.

THE KERN RIVER OUTING OF 1916 — *Jessie McGilvray Treat* — 170
Plates CLXIII, CLXIV, CLXV, CLXVI, CLXVII, CLXVIII, CLXIX, CLXXII, CLXXIII, CLXXIV, CLXXV, CLXXVI, CLXXVII.

VIA DEER CREEK — *C. Nelson Hackett* — 179
Plates CLXX, CLXXI.

STUDIES IN THE SIERRA — *John Muir* — 184
III. ANCIENT GLACIERS AND THEIR PATHWAYS

INDIAN VILLAGE AND CAMP SITES IN YOSEMITE VALLEY — *C. Hart Merriam* — 202

ORGANIZATION OF THE SIERRA CLUB — 210

EDITORIALS — 211
Plates CLXXVIII, CLXXIX.

REPORTS OF COMMITTEES — 215

NOTES AND CORRESPONDENCE — 221
Plates CLXXX, CLXXXI, CLXXXII, CLXXXIII, CLXXXIV, CLXXXV.

NATIONAL PARK NOTES — 241

FORESTRY NOTES — 253

BOOK REVIEWS — 258

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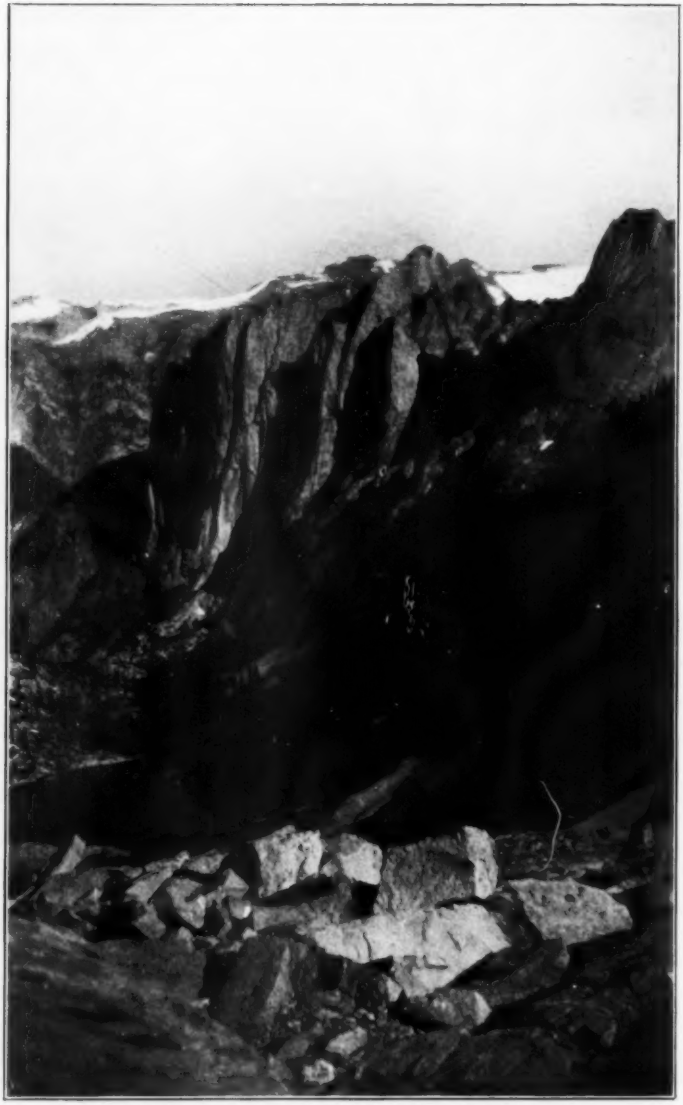

HEAD OF DEER CREEK CAÑON, LOOKING TOWARD
MIDDLE FORK OF KAWEAH RIVER
Photo by Walter L. Huber

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VOLUME TEN NUMBER TWO

SAN FRANCISCO
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THE SIERRA CLUB

By Joseph N. Le Conte

THE true grandeur of our Sierra Nevada was first opened to the world by the discovery of the Yosemite Valley in 1851. In spite of the difficulties of travel, a great many people found their way into this famous valley during the early fifties, at a time when access was possible only on horseback and over the roughest of trails. It is not surprising then that these hardy pioneers soon discovered that the Yosemite was only the gateway to a vast alpine region whose equal was not to be found within the boundaries of the United States. Incited by the reports of early explorers, in the summer of 1863 Professor J. D. Whitney, chief of the California Geological Survey, which was created by act of legislature in 1860, decided to send an exploring party into this remote region. The results of this first scientific expedition were so remarkable that in 1864 a second party was sent to explore the basins of the Kings and San Joaquin rivers. The results of this early reconnaissance are to be found

in volume I of the reports of the Geological Survey of California, published in 1865.

To J. D. Whitney, therefore, and his associates, William H. Brewer, Clarence King, J. T. Gardner, and Charles F. Hoffmann, belong the credit of first exploring, describing, and mapping in outline this great area of difficult country.

In 1868 John Muir came to California and immediately made his way into the Yosemite Valley, which by this time was renowned throughout the world. He at once began his travels and studies in the high Sierra, and his first contribution to the literature of this subject was published in 1871. From then on to the time of his death, his writings, more than any one thing, have directed the attention of the public to the wonders of the Sierra.

Beginning about 1870, expeditions were formed by enthusiastic mountain-lovers simply for the purpose of exploring and enjoying the high Sierra. But these also were but pioneers, and each party was obliged to work its own way through independently, making use of the trails of the sheepmen who at a very early date began using the rich pasturage of the alpine meadows. Practically no detailed information was to be obtained then in any published accounts. All descriptions so far were of a general nature and lacked that accuracy of detail of route and trail so necessary to the traveler.

It finally became evident that some organization was needed whereby the experiences and practical results of travel might be brought together and preserved for the use of others to follow. This idea in a general way may have been in the minds of some of the very earliest explorers in this field, but if so no record of such has been found. The first definite move in this direction seems to have been made by Professor J. H. Senger, of the University of California, in 1886, and the beginnings are shown in a short correspondence between himself and Mr. Dennison, then State Guardian of the Yosemite Valley. Professor Senger's first idea was to establish a library of mountaineering literature in the Yosemite Valley, bringing together not only all books relating to the California mountains, but collecting all published maps, as well as sketch-maps and notes and itineraries made by travelers. His idea was evidently that Yosemite

would be the natural starting-point from which all trips would be made. Later the idea expanded, and by 1890 the proposition of forming a club or association was widely discussed, particularly among the students and faculty of the University of California, and the name "Sierra Club" seems to have been thought of at that time. Professor Senger discussed the matter with many of his friends, notably with Professor William D. Armes, of the state university, with Mr. Warren Olney, of San Francisco, and with John Muir. I myself realized the importance of such a club during a trip through the Kings River Sierra in 1890. At that time nothing was popularly known of the trails in that section, and our party knew nothing from day to day of what lay before us.

The one thing which finally brought matters to a head was the creation of the Yosemite, Sequoia, and General Grant national parks in October, 1890. The idea here was first conceived by Mr. Robert Underwood Johnson, editor of the *Century Magazine*. He visited Yosemite during the summer of 1889, and was persuaded by Mr. Muir to accompany him to the high Sierra region about the headwaters of the Tuolumne and Merced rivers. He noticed the sad destruction caused by sheep in the meadows and wild-flower gardens, descriptions of which he had read in Mr. Muir's articles, and on his return he urged the formation of a great national park which should include this upper region, offering to Mr. Muir the use of the *Century Magazine* to put before the public a proper description of this and other scenic wonders of the Sierra. Right gladly Mr. Muir took up the work, and, energetically backed by those who afterward were founders of the Sierra Club, the necessary bills were passed through Congress and signed by President Cleveland.

The formation of the Sierra Club was now no longer a matter of doubt. It was decided to abandon the idea of headquarters in Yosemite Valley, as that was obviously inappropriate to the broader idea, and to make the place of business San Francisco.

On January 11, 1892, Professor Senger, encouraged by the universal interest shown, wrote to Mr. Olney, whose letter in reply follows:

PROF. HENRY SENGER, SAN FRANCISCO, Jan. 14, 1892.

Dear Sir: Your favor of the 11th was not received until yesterday.

I should be pleased to confer with you in regard to the forming of a Sierra Club. Don't know that I could take an active part, but should be pleased to be present at the birth of the Club.

Truly yours,

WARREN OLNEY

On Saturday, January 16, Professor Senger called at Mr. Olney's office and the matter was discussed, this being the first of several such informal discussions. Finally it was decided to call a meeting of interested persons for purposes of organization. The following letter from John Muir, dated May 10, 1892, and reproduced in Plate CLVI, is the earliest I have been able to find from him bearing on this subject:

MR. HENRY SENGER, MARTINEZ, May 10, 1892.

Dear Sir: I am greatly interested in the formation of an Alpine Club, and think with you and Mr. Olney that the time has come when such a club should be organized. You may count on me as a member and as willing to do all in my power to further the interests of such a club. I shall be glad to see you at my house near Martinez, or to meet you in the city. Mr. Armes of the State University is also interested in the organization of such a club, and I advise you to correspond with him.

Yours truly,

JOHN MUIR

Shortly afterward came a second letter from Mr. Muir, which was as follows:

PROF. SENGER, MARTINEZ, May 22.

Dear Sir: I will gladly attend the meeting on Saturday next at Mr. Olney's office.

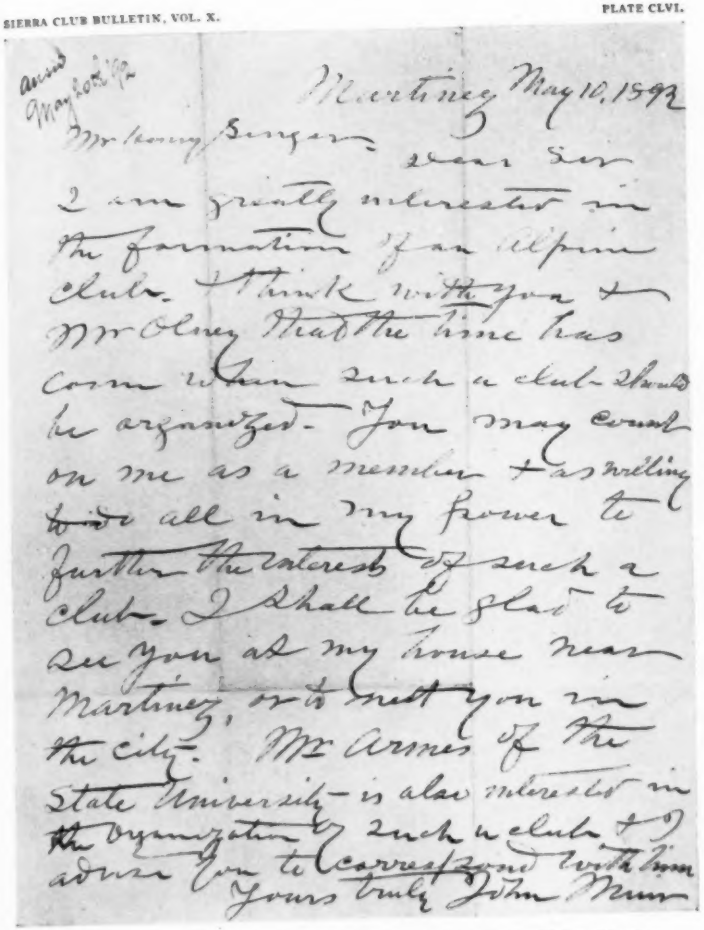
I suppose it will not be best to have a large number present at the first meeting. I should like to have Mr. Thos. Magee invited as likely to prove useful and Mr. Pelham Ames.

Hoping that we will be able to do something for wildness and make the mountains glad, I remain

Cordially yours,

JOHN MUIR

This mentions a meeting to be called on "Saturday next," which was Saturday, May 28, one week before the articles of incor-



Martinez May 10, 1892

Mr Henry Senger

Dear Sir

I am greatly interested in the formation of an Alpine club. I think with you & Mr Olney that the time has come when such a club should be organized. You may count on me as a member & as willing to do all in my power to further the interests of such a club. I shall be glad to see you at my home near Martinez, or to meet you in the city. Mr Armes of the State University is also interested in the organization of such a club & I advise you to correspond with him

Yours truly John Muir

JOHN MUIR'S FIRST LETTER ABOUT THE SIERRA CLUB

poration were signed. At this preliminary meeting the policy of the proposed Sierra Club was outlined, and it was left to Mr. Olney to draw up the papers necessary for incorporation.

The next meeting was on Saturday, June 4, 1892, and at this the agreement of association, the articles of incorporation, and the by-laws were signed. The first board of directors was elected and consisted of:

JOHN MUIR, President,
WARREN OLNEY, First Vice-President,
J. C. BRANNER, Second Vice-President,
WILLIAM D. ARMES, Secretary,
J. H. SENGER, Corresponding Secretary,
MARK B. KERR, Treasurer,
D. S. JORDAN,
W. D. JOHNSON,
R. M. PRICE.

It will be noticed that John Muir was the first president, and he held that office for twenty-two years, until the time of his death.

The purposes set forth in, and the wording of, the articles of incorporation show a great deal of thought and care in the preparation. Throughout the entire twenty-five years of active life of the club they have served the purpose admirably. If drawn today to serve present needs of our club, they could not have been put in better form. Inasmuch as they appear in complete form only in Publication No. 1 of the club, which is now entirely out of print, I shall quote them in full.

ARTICLES OF INCORPORATION

Know all men by these presents:

That we, the undersigned, a majority of whom are citizens and residents of the State of California, have this day voluntarily associated ourselves together for the purpose of forming a Corporation under the laws of the State of California. *And we hereby certify as follows, to-wit:*

I.

That the name of said Corporation shall be the SIERRA CLUB.

II.

That the said Association is made, and the said Corporation is formed, not for pecuniary profit.

III.

That the purposes for which this Corporation is formed are as follows, to-wit: To explore, enjoy and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and government in preserving the forests and other natural features of the Sierra Nevada Mountains; to take, acquire, purchase, hold, sell and convey real and personal property, and to mortgage or pledge the same for the purpose of securing any indebtedness which the Corporation may incur, and to make and enter into any and all obligations, contracts and agreements concerning or relating to the business or affairs of the Corporation, or the management of its property.

IV.

That the place where the principal business of said Corporation is to be transacted is the City and County of San Francisco, State of California.

V.

That the term for which said Corporation is to exist is fifty years from and after the date of its incorporation.

VI.

That the number of Directors or Trustees of said Corporation shall be nine (9), and that the names and residences of the Directors or Trustees who are appointed for the first year, to serve until the election and qualification of their successors, are as follows, to-wit:

JOHN MUIR, Martinez, Cal.
WARREN OLNEY, Oakland, Cal.
J. H. SENGER, San Francisco, Cal.
WILLIAM D. ARMES, Oakland, Cal.
DAVID S. JORDAN, Palo Alto, Cal.
R. M. PRICE, Berkeley, Cal.
MARK BRICKELL KERR, Golden Gate, Alameda Co., Cal.
WILLARD D. JOHNSON, Berkeley, Cal.
JOHN C. BRANNER, Palo Alto, Cal.

VII.

That the said Corporation has, and shall have, no capital stock. *And we further certify and declare:* That the above-named Directors of the Corporation were duly elected Directors thereof by the members of said Corporation, at an election for Directors held at 101 Sansome Street, in the City and County of San Francisco, State of California, at eleven A. M., on this fourth day of June, 1892, and that a majority of members of said Association

and Corporation were present and voted at said election, and that at such election each of said Directors received the votes of a majority of the members of the Corporation present; as more fully appears from the certificate of the two Tellers of Election hereunto annexed and hereby referred to and made part hereof.

In witness whereof, we have hereunto set our hands and seals this fourth day of June, A. D. 1892.

W. H. Beatty,	John Muir,
Ralph C. Harrison,	J. H. Senger,
George C. Perkins,	William D. Armes,
G. B. Bayley,	Mark Brickell Kerr,
John C. Branner,	Dorville Libby,
James O. Griffin,	Charles A. Bailey,
Willard D. Johnson,	C. D. Robinson,
Josiah Keep,	C. B. Bradley,
Hermann Kower,	Fred S. Pheby,
Hubert P. Dyer,	Charles G. Harker,
W. H. Henry,	R. M. Price,
L. de F. Bartlett,	Will Denman,
W. L. Jepson, Jr.,	Warren Gregory.
Warren Olney.	

The certificate of the Secretary of State of the State of California was issued June 17, 1892. It will be noticed in reading the above purposes of the club that they show two distinct points of view, which seem to reflect the characters of the two most active organizers. A club to "explore, enjoy and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them" was evidently the first idea conceived of by Professor Senger, while the purpose of "enlisting the support and co-operation of the people and the government in preserving the forests and other natural features of the Sierra Nevada Mountains" shows the legal mind of Mr. Olney.

The club began its work in a modest way with a charter membership of 182, but from the first it began developing along all the lines laid down by its founders. The first publication, issued in the summer of 1892, has already been referred to as containing the articles of incorporation and by-laws. The first Bulletin appeared January, 1893, and the second in June of the same year. These first three publications were of smaller size than the present Bulletin, being only about 5 by 8 inches. Beginning January, 1894, the Bulletin was enlarged to its

present form. In 1893 also there were published two outline maps, one of the Yosemite and the other of the Kings River High Sierra, which were the only maps of the high mountains at that time showing trails and routes. From the first also the club took an active part in the protection of the national parks. As early as October, 1892, the club considered, took action against, and by its influence defeated the so-called Caminetti Bill which proposed to cut down the boundaries of the Yosemite National Park, and it also protested against certain illegal timber-cutting in national parks. Money was also appropriated for the improvement of trails and marking of routes in the Tuolumne Sierra.

The question of a seal came up at an early date. When first organized a simple seal was adopted, showing a pine tree within a circular margin, with the words "Altiora peto" below. In the spring of 1894 Mr. Willis Polk designed the present seal, with the *Sequoia gigantea* in the foreground, Half Dome and a typical alpine group, Mount Ritter and Banner Peak, in the distance.

The old Sierra Club seal

It would be quite impossible in the short space of this article to follow all the labors and achievements of the Sierra Club, and besides the later work is already well known to a majority of the members; so I merely mention here the most important pieces of work that it has carried through or aided in carrying through to successful completion. In 1893 the great Sierra Forest Reserves were established; a movement which had always been strongly urged and fostered by the founders of the club. In the fall of 1895 a large and enthusiastic meeting of the club was held,* and notable addresses on the subject of forest preservation were made by Professor Le Conte, Mr. Muir, and Professor Dudley. The effect of this was to give the club's unqualified indorsement to the policy of forest reserves, and this greatly aided in the creation of new reserves soon afterward.

The next important work was the establishment of the Yosemite headquarters in 1898. The summer before it was

* Sierra Club Bulletin, Vol. I, p. 268.

FIRST HEADQUARTERS OF THE SIERRA CLUB IN YOSEMITE VALLEY (1868)
Photo by J. N. Le Conte

LE CONTE MEMORIAL LODGE
Photo by J. N. Le Conte

PARSONS MEMORIAL LODGE
Photo by R. H. Bailey

suggested to the writer by Mr. Abbott Kinney, of Los Angeles, then a member of the State Board of Yosemite Commissioners, that the club establish a public reading-room and bureau of information such as originally contemplated by Professor Senger. The matter was brought to the attention of the commission, and it was agreed that the state should grant the use of a building, to be furnished and equipped by our club, the salary of the custodian to be shared equally by the commission and the Sierra Club. The old Sinning cottage, opposite the present superintendent's office, was fitted up during the spring of 1898, and the club was most fortunate in securing the services of Mr. William E. Colby as the first custodian. The headquarters were maintained in this way for several years, though with difficulty, since after the first three years the State Commission was obliged to withdraw its financial support, due to lack of funds. Finally, after the death of Professor Joseph Le Conte in the valley, in 1901, it was decided to erect a memorial lodge, which should also be used as a permanent headquarters. A fund of $6000 was raised by subscription, and the beautiful stone building with its bronze medallion of Professor Le Conte over the fireplace was finished and dedicated in 1904.

One of the most important developments in the history of the club, which came about this time, was the organization of the annual outings in 1901. In 1900 Mr. Colby was elected to the board of directors, and made secretary, and through his efforts and those of Mr. E. T. Parsons the directors authorized the annual outing feature. The first outing was in the Tuolumne Meadows in 1901, the second in the Kings River Cañon, and the third on the Kern. Since the beginning, the outings have steadily grown in size and perfection of organization, until now they stand out as the most popular single feature of the club and a model for other mountaineering clubs.

The most important piece of work in which the club has ever engaged was the passage of a bill through the legislature receding the Yosemite State Park to the Government, and the subsequent acceptance of it by Congress as a part of the national park. Ever since the creation of the Yosemite National Park, the state park, originally established June 30, 1864, required an entirely needless duplication of administration within the

boundaries of the larger grant. This recession was vigorously opposed by many of the members of the legislature, and by some of the press as well, and it is generally conceded that except for the strenuous work done by the Sierra Club the bill, carried as it was by so small a margin, would never have gone through. The good effects of this combination can now be easily recognized. Whereas the state was never able to appropriate over $10,000 per annum, and usually less, Congress gave $250,000 last year for the Yosemite National Park, and we are asking for $319,000 this year.

About 1904, members residing in the vicinity of San Francisco suggested the idea of local Sunday walks which could be arranged by a committee and announced in advance, thus giving those who could not afford the time for the summer outing an opportunity to enjoy the beauties of nature in a milder way. These first walks were announced in the advertising columns of the daily papers each week, but soon this was replaced by the regular printed schedule as at present. The local walks have proved a great success, and these, together with the outings, have done much to bring the membership of the club up to its present large figure.

An increasing number of members from southern California led to the establishment of the Southern California Section with headquarters in Los Angeles in 1905, when the revised by-laws were adopted by vote of the club in April of that year. It has erected through private subscription the John Muir Lodge in the Santa Anita Cañon.

In 1912 it was called to the attention of the directors of the club that the famous Lambert Soda Springs property was for sale. In order to prevent its passing into improper hands, Mr. Colby promptly took an option on the property, and a year later the entire amount of the purchase price was raised by subscription amongst the club membership. After the death of Mr. E. T. Parsons, in 1914, it was decided to erect on the property a suitable stone building, to be known as the Parsons Memorial Lodge. This was accordingly done in 1915, at an expense of about $3000. It is now open in charge of a custodian each summer.

One of the recent good deeds of the club has been the sav-

ing of the remarkable and unique Devil's Postpile from destruction. When an application was filed with the Bureau of Forestry for a permit to blast it into the river to form a dam for power purposes, the directors took the matter up at once, and by personal letters to President Taft succeeded in having both the Postpile and the Rainbow Fall made into a national monument.

The Sierra Club conceived the idea of the John Muir Trail, for the starting of which the legislature appropriated $10,000 two years ago. We need an additional appropriation to finish it and money to extend it northward to Lake Tahoe, and all members of the club should urge the members of the state legislature to appropriate the $20,000 required for its completion. The greatest work which lies before us this winter is the passage through Congress of a bill which shall create a Greater Sequoia Park, including the headwaters of the Kern, Kaweah, and Kings rivers, and a small portion of those of the San Joaquin.

The club is now in a flourishing condition. It has over 1800 members, and its income from dues and advertising is some $5000 per annum. Its publications fill nine volumes, and these contain practically all the results of exploration in the high Sierra during the past twenty-five years, as well as work in other mountain regions. Let every one then put his shoulder to the wheel, so that, as Mr. Muir says in his letter, "We will be able to do something for wildness and make the mountains glad."

TO THE MEMORY OF JOHN MUIR

By C. Hart Merriam

JOHN MUIR was doubtless more widely known and more generally loved than any other Californian. He was a famous wanderer, and left a trail that is well worth following. It leads to the mountains and forests, to health and happiness, and to a better appreciation of nature. While he loved the mountains and everything in them, his chief interests centered about the dynamic forces that shaped their features and the vegetation that clothed their slopes.

But, of all the objects in nature, trees appealed to him most strongly. These he knew as no other man has known them. They were ever-present in his mind and formed an inexhaustible theme of conversation. On his walks and in his study he delighted to talk of their individual peculiarities, and with his pencil he would make rough but characteristic sketches showing the dominant distinctive features of each species. He knew the dates of flowering and the differences of the sexes, and could tell offhand the time required by the several pines for maturing their cones. In nearly every case he could recognize a tree at a distance by its general habit, and when specimens were shown him he could identify them at a glance by the branches, flowers, fruit, or bark.

To gratify his love of forests and increase his knowledge of them he traveled far, studying not only those of the Pacific Coast from Alaska and British Columbia to southern California, those of the Rocky Mountains from Montana to Arizona, those of the Eastern states in both the northern and southern Alleghanies and in the pine barrens and everglades of Florida, but also traversing Russia, Siberia, and India, visiting Australia, New Zealand, and the Philippines, and late in life even journeying to South America to see for himself the great tropical forests of the Amazon and the remarkable Araucaria of western Patagonia. Has any other human eye seen so many and diverse types of arboreous vegetation, or any other mind learned so much of the great forests of the world?

One often hears Muir spoken of as an authority on the animal life of the mountains. This is an error. For while he liked to see birds and mammals in the wilderness and about his camps, he rarely troubled himself to learn their proper names and relationships. Now and then a particular species impressed itself sufficiently upon his attention to appear in his writings, and in a few instances to form the subject of a special article or chapter. His accounts of the water-ouzel and Sierra red squirrel—which latter he confused with the Douglas squirrel of the coast—are real contributions to natural history, abounding in original observations, full of sympathy, and charmingly told. But for scientific study of the great army of small birds and mammals he cared little. Plants, on the other hand, were always dear to him; he knew the names of hundreds of species and could tell at what altitude and in what situation each was likely to be found.

He had a strong mechanical bent, was fond of machinery, quick to grasp principles of mechanics, and was familiar with the various applications of power. He loved to study the forces of nature, and was one of the first to recognize the part played by ice in sculpturing mountains, cañons, and valleys.

In 1870 or 1871 Muir took my father to Clouds Rest, from which lofty outlook he pointed with enthusiasm and conviction to the several channels through which deep rivers of ice had found their way before uniting to form the glacier that had plowed out and shaped Yosemite Valley. And later, when traveling together in the upper Tuolumne and Mokelumne regions, he often surprised me by the extent of his knowledge of the depth of the former glaciers and the details of ice action in those parts. It is a pity that his early studies of the ancient glaciers of the Sierra were not recorded in permanent form, but a matter of congratulation that his observations of those of Alaska have finally been published.*

Muir was a great talker, but not a loud talker. And although he usually monopolized the conversation, he was listened to

* See "On the Glaciation of the Arctic and Sub-Arctic Regions visited by the United States Steamer 'Corwin' in the year 1881." In U. S. Senate documents, 48th Congress, 1st session. Vol. 8, No. 204, pp. 135-147.
"Notes on the Pacific Coast Glaciers." In Harriman Alaska Expedition. Vol. 1, pp. 119-135. 1901.
"Travels in Alaska." 1915.

with attention and often with delight. Like most men who have spent much of their lives in the mountains, he was an independent thinker and had well-digested opinions on a surprisingly large number of topics. He was argumentative by nature, and his Scotch blood showed in the persistence and tenacity with which he upheld his point of view. On the other hand, he was rarely aggressive or disagreeable. In fact, he was one of the most charming companions I have ever known. In addition to a kindly and generous nature, he possessed a keen sense of humor and was something of a tease. When walking the deck of the steamer on the Harriman Alaska Expedition, his most constant companion was the eminent geographer, the late Henry Gannett. Speaking of their friendship, he explained that when he first saw Gannett he was impressed by what he called the "preternatural solemnity" of his expression. This, he asserted, with a merry look in his eye, had convinced him that Gannett, like himself, was fond of humor, and he was not long in learning that Gannett, though not a Scotchman, also loved an argument. The result was that the two were always happy together.

Muir abhorred politics, and once, when speaking of a man whom he regarded as having fallen from grace, remarked, "This playing at politics saps the very foundations of righteousness."

As a woodsman he was peculiar, combining an unusual knowledge of forest and mountain with a remarkably slender fund of what is commonly called woodcraft. For, in spite of his having spent a large part of his life in the wilderness, he knew less about camping than almost any man I have ever camped with. He could choose a sheltered spot for the night, was an adept in building a small fire in a safe place, and could make an excellent cup of coffee in his tin cup. But of the art and conveniences of camping as ordinarily understood he was as innocent as a child. His earlier trips in the mountains had been made afoot. He had carried no bed or blanket, and in the way of food only bread and tea, so that his main concern was in finding a protected place, usually a hollow beside a log, where he could spend the night with a minimum of discomfort from the cold. The heat of a small fire, requiring frequent replenishment, served instead of the usual sleeping-bag or blankets.

In after years his visits to the mountains were made with

others who looked after the camping. I shall never forget the equipment he brought on his first trip with me into the High Sierra. It was in the late fall, when we were likely to meet a snow-storm at any time. And in fact two such storms overtook us—one in Mokelumne Pass, the other in Mono Pass. Our route lay in the high mountains from Lake Tahoe to Bloody Cañon. The outfit he brought consisted of the clothes he wore and a small leather grip containing a clean shirt, a change of underclothing, and some extra socks. In spite of the lateness of the season, the high altitude, the icy nights, the almost certainty of snow-storms—in spite of all these, he carried not so much as a single blanket!

In reply to my inquiry as to the whereabouts of his bed, he replied that he had tramped the mountains for years, but had never carried one. I was amazed, but the condition confronting us permitted no compromise. I told him, therefore, that, although he had frequently slept on the ground without covering in summer when many years younger, he was too old to do so now, particularly at this late season of the year. I told him also that I had a good sleeping-bag, just big enough for one, with no extra blankets for two, and, further, that it was out of the question for me to set out on such a trip with a companion who had no bed. Recognizing the justice of my argument, he compromised by asking, "Where can I buy a bed in the mountains?" This problem was soon solved and the trip was carried out as had been planned. It may be added that, although my ground-canvas was a large one and did duty for us both, as we slept close together, yet the severity of the weather was such that he suffered nearly every night from cold. He made no complaint, but was always up and had a small fire burning and coffee brewing before full daylight. The incident is mentioned merely to emphasize a peculiarity of his character—that he rarely made any provision beforehand for his own comfort.

Another marked peculiarity for a woodsman was that he never carried a gun or killed game either for sport or meat, preferring to eat dry bread.

He was a light eater and never seemed really hungry. Even when tired after a long tramp or arduous horseback ride, he would rather talk than eat, and, as many who have camped with

him know, he often had to be urged to eat in order that the camp-dishes might be packed to move on. And more than once his companions at the table have quietly taken what was on his plate while he, without noticing what had been done, kept right on talking. I remember an occasion when a plate of fried trout was set before him. It was well in the afternoon, and he had had nothing to eat since a six-o'clock breakfast; he had walked many miles and was tired. Nevertheless, he talked continuously of the forest and mountains through which he had gone, and was utterly oblivious to the fact that his plate was filled and emptied three times by his neighbors, while all he had taken was a piece of bread and a cup of coffee. I finally told him that it was time to go, and that if he would stop and eat I would do the talking for a few minutes until he had finished.

Muir was a worker. He felt that he had a task to perform and little time for idling. When in the wilderness he was continually making observations and recording them in his journals. These were usually, sometimes lavishly, illustrated by sketches that served to explain or emphasize the text. When at home he was busy looking after his fruit ranch or engaged in writing; and, as the years went by, the latter occupation consumed most of his time. While he did much writing, as shown by his books and manuscripts, he never did it easily or with pleasure, but from a sense of duty. More than once he spoke to me of the difference in this respect between John Burroughs and himself. Burroughs, he said, never would write except when the mood was on him; then he wrote rapidly, and sent his manuscript to the press with little or no revision, while he (Muir) made it his business to write every day, whether in the mood or not. To him writing was laborious, if not irksome, and much time was spent in smoothing, balancing, paragraphing, and arranging it for the press. He possessed a surprising amount of literary acumen, and usually cut out and trimmed down much that he had written, saying it was a serious error to dwell too long on one detail; that the reader wearied of a single theme, and should be led along by frequent changes. He had never used a stenographer until a few years before his death. When visiting the late E. H. Harriman at his Pelican Bay camp on Klamath Lake, Mr. Harriman had urged him to dictate an

outline of his life. This he finally consented to attempt, dictating to one of Mr. Harriman's stenographers. The result formed the basis of his autobiography, since published.

While Muir was a man of marked individuality and pronounced tastes, and while at one period of his life he was much alone, he nevertheless prized congenial companionship and numbered among his friends men eminent in constructive enterprise as well as in art, literature, and science. His most intimate friends perhaps, outside his own family, were the educator John Swett and the painter William Keith. Keith, like himself, was a Scotchman, and the two were great cronies. To hear them spar in their native dialect was a real treat.

How much Muir's life work was influenced by his family it would be hard to say. His wife, who died a few years before he did, was a woman of more than ordinary character and ability. For years she relieved him of most of the cares of the home ranch at Martinez and a thousand and one little things that would have worried him or interrupted his work. She was a clever and noble woman, but so retiring that she was known to only a few. He owed much also to the sympathetic loyalty of his two daughters, Helen and Wanda, who, like their mother, were devoted to him and the work he was doing.

Muir's influence has been a strong factor in the development of our national parks and forests and in their utilization as camping and recreation grounds, while to the people who could not go his writings have brought from the trees and mountains an inspiration and message of happiness.

TEN VOLUMES OF PUBLICATIONS

1892 TO 1917

By Elliott McAllister

THE activities of the Sierra Club during the past twenty-five years have found a faithful record in its publications. Ample reward follows an examination of those records. In the earlier volumes are found narratives of many pioneer trips into regions that are now well known to many members of the club. The explorations of Theodore S. Solomons, of Robert M. Price, of Bolton Coit Brown, and the winter trips of J. E. Church, Jr., are all notable in that regard. At that time J. N. Le Conte commenced the publication of his valuable maps of the High Sierra. The accuracy of these can be appreciated only by one who has had occasion to use them. More interesting than any of the fine photographs appearing throughout the publications are the original sketches of the high mountain regions made by Bolton Coit Brown.

Joseph Le Conte's *Ramblings Through the High Sierra*, the diary of his trip through the Yosemite in 1870, which had been privately printed in 1875, was republished by the club in 1900 in volume III.

All of these reports and accounts of what awaited the explorer brought about the demand for that splendid undertaking of the club, its summer outing. Until 1900 the club had been telling its members of the beauties and wonders that awaited them, but not until that year had anyone been found willing to undertake the responsibility and labor attending upon organization and control of an outing for all members that desired to attend. At that time, however, the Outing Committee, composed of J. N. Le Conte, E. T. Parsons, A. I. Street, and William E. Colby, accepted this work, and in 1901 conducted the first outing into the Tuolumne Meadows and from that point into the High Sierra.

From the outset these summer outings were recognized as

one of the primary activities of the club, and after the necessary experience acquired during the first, second, and third seasons they have been of increasing success. The leaders of the club in these outings have taken less-experienced members up every notable mountain peak from Mount Rainier in the north to Mount Whitney in the south; more particularly the region from the Lyell group east of Yosemite and south to Mount Whitney has been "explored, enjoyed, and rendered accessible," to quote from the articles of incorporation, and "authentic information published" in a way to compel the respect and cooperation of the state and federal authorities.

Each of the outings had its faithful historian. The first one, into Tuolumne Meadows in 1901, was described by Edward Taylor Parsons. In these meadows fourteen years later the memorial lodge to him was dedicated by his grateful and appreciative fellow-members. These descriptions of the outings, together with the other articles by individuals, have furnished such a large amount of interesting matter and picture the life of the club in the High Sierra so well that no less a person than the distinguished mountain-climber Sir Martin Conway writes the club under date of April, 1912:

> The Sierra Club seems to me to preserve much of the old spirit which was in Alpine climbers in the days when climbing was a fresh thing. I like to think of your camping parties in the great forest valleys and along their vast far-seeing slopes. I like to think of the great trout found in the streams you have stocked. I like to think of all the good you are doing and trying to do in forest conservation.

The above is from a man whose record in the Bolivian Andes was Mount Aconcagua (23,090 feet).

Edward Whymper enjoyed these publications and expressed this appreciation in the substantial bequest to the club of £50.

The late William Russell Dudley, from the beginning of our publications until his death, in 1911, kept us constantly informed in his carefully edited Forestry Notes. For over sixteen years he patiently recorded and published in Forestry Notes any occurrence pertinent to forestry, reservations, national parks, and kindred subjects. The indebtedness of the club to him for this work is very great. These files always will be a useful reference for anyone interested in the subject.

The articles on the geological conditions of our mountains, such as the domes and their structure, lake ramparts, glacial erosion, may be mentioned among those contributed by men well known in that special work. More particularly might be mentioned the articles on the birds of the mountains and the remarkable photographs connected therewith. *Birds of the High Mountains*, by Kellogg, numerous articles by Badè, and a very remarkable photograph of the water-ouzel at page 245, volume VI, are worthy of special note.

The reader searching for information on the cone-bearing trees or on the flora of the Yosemite Valley will find authoritative accounts, and throughout all the volumes many have expressed their appreciation in poetry or in prose of the wonders to be found throughout our Sierra Nevada Mountains.

The work of the Sierra Club having been firmly established under the distinguished leadership of John Muir, will not fail now that he is gone, but will continue to broaden its scope and to increase its influence.

THE WAR-ZONE FOREST OF THE KERN

By Walter Mulford

THE Chagoopa Plateau, with its Sky-Parlor Meadow, its Moraine Lake, its forest of subalpine pines, and its rock-ribbed ring of impressive peaks—what a joy it was! Sunrise over Mount Whitney and the main crest of the Sierra; sunset behind the Great Western Divide, outlined sharply but not harshly across the lake; the climb heavenward to the top of Kaweah; the descent to the beautiful cañon of the Big Arroyo; the brilliant moonlight, making lodgepole and foxtail more impressive and hiding for a time the scars of the grim fight waged by these hardy pines against frost and wind, drought and beetle—to those of us who were there nothing further is needed to recall happy memories of a camp-site richly endowed with charm and interest and comfort. Some of us went on long side-trips. Some of us, responsive to the influence of high life, indulged in that wild camp cabaret. Some of us even tried to get lost on that confusing plateau. Finally, all of us passed on, more or less thoughtlessly, to other parts of the wonderland.

More or less thoughtlessly! If anyone had asked us whether we would wish the beauty of that high plateau to be permanent, there could have been but one answer. If we had been asked further whether it would still be beautiful without the forest, there would have come an equally emphatic reply. Treeless wastes are fascinating—or repellent. They are often inspiring in their bigness, in their evidence of great power behind and beyond. But they are rarely beautiful. And they are never good places in which to live or camp. Unconsciously we knew that we owed the beauty and comfort of our Chagoopa camp primarily to the forest. Did we stop to wonder whether the forest would be there always?

Perhaps we did not notice the signs of social instability in this community of Chagoopa Forest. Most of the citizens are old folks—several centuries old, although only from one to three feet in diameter. Very many of them are far past their prime,

and their "spike-tops,"* most of which are due to old age or insect attack, show that soon there will be many vacant places in the big family. This must be the case in all communities of trees and people. But the significant thing here is that there are very few youths and almost no children on nearly all of the plateau. And the infirmities of the old folks are likely to increase more than proportionately to their advancing age, as the death of neighbors deprives them of the mutual protection so sorely needed in exposed localities. In the forest world, Chagoopa Town is doomed unless more young trees start in the next half-century.

Nature is wasteful in Chagoopa Forest. Long searches for seedlings were practically fruitless on most parts of the plateau. Young trees were abundant only in a few places. Yet careful counts in one small grove showed an average of 450,000 lodgepole-pine seedlings per acre—more than ten per square foot! Nine hundred and ninety-nine of these must die before the thousandth tree can come to maturity, for mere lack of growing space. Thirty-story, densely thronged tenements in one part of town; thousands of vacant homes with light and air on other streets! There are perhaps six thousand acres on the plateau. There are about six acres in this area of closely packed seedlings. If Nature had spread out on one thousand acres the seedlings she has crowded on one acre, there would be an average of about 450 seedlings per acre over the entire plateau. This would be an admirable basis for the continuance of the community. But Nature rarely does things that way. She has never studied scientific management as man has studied it for the bricklayer.

Chagoopa Plateau is not an exceptional locality as regards uncertainty for the future. On that wonderful day's trip from Crabtree Meadow to Tyndall Creek we were almost constantly in a war zone. Now and again we were in the first line of trenches itself, where the last tree outposts are struggling to hold timber-line where it is. For a time we were in the uncontested territory of the treeless waste, where the forest can never enter unless the climate changes. *But on that entire day's trip we were never in the undisputed domain of the forest.* The

* "Spike-top" means that the upper portion of the tree-crown is dead.

forest is one of Nature's children. She has other children, and she lets them struggle with one another with all the strength and skill at their command. There is a firing-line and a wide war zone in all our high altitudes, where wind and frost shout "Back!" and the stubborn trees cry "Forward!" Through the centuries the battle-line surges back and forth—forward into the waste with discouraging slowness, often backward into the forest with disheartening suddenness. Nature leaves the victory to the stronger forces, and the laurel wreath does not always go to the side which civilized man desires and needs to see win.

Nature is notoriously wasteful, not only in her treatment of these disputed borderlands of the forest realm, but in all forests, even those in which the results of her marvelous handiwork are most awe-inspiring. Here she places too many trees; there, too few. She almost invariably allows the most desirable trees to be more or less displaced by others which are poorer from the standpoint of their usefulness to man. Her trees do not grow nearly so fast as when she takes man's skill into partnership. The difference in time required to produce merchantable trees in timber-producing forests, as between Nature alone and Nature plus constructive man, is so great as to be measured in decades rather than years. Nature's forest was well able to meet the slight needs of savage man. Civilized man, with his vastly greater demands on the forest, must help Nature to mend her ways, else the forest fails.

It is now economically possible for man to assist Nature greatly in the middle-altitude forests of the Sierra—that is, in the great timber-producing zone. Aid of the highest importance is being given in many ways in this belt, thanks to the national forests and the national parks. In the higher zone in which Chagoopa Forest and the Crabtree-Tyndall region are located, we in the United States cannot afford at present to help directly the timber-line forest in its fight. Such help has been given in the Alps and Pyrenees by tree-planting and engineering works, to the great advantage of the valleys below. But our governmental agencies can and are giving powerful indirect help by restricting man as a destructive animal. Chagoopa Forest is in a more precarious condition now than is likely to have been the case before the white man came, because until recently fires

which he started* and animals which he introduced roamed at will, while trespassers cut trees without warrant. But its future is more assured than it was twelve years ago, because fire, grazing, and trespass are now controlled. The present scarcity of seedlings is not necessarily discouraging. In situations so exposed, it may happen that young trees will start in considerable numbers only at infrequent intervals, when there happens to come a good seed-year followed by weather conditions favorable to the germination of the seed and the first few years' development of the delicate seedlings. This combination of circumstances may not have occurred since the organization of the National Forest in 1905. Even granting that planting is impracticable in that locality, there is still hope for Chagoopa Town.

The hope centers in the continuance of the forester's care of the region. There are powerful selfish interests still at work quietly trying to undermine and finally break down the whole structure of governmental forest administration, which has been so painfully built up. The forest has all it can do along its frontier to hold back its unavoidable foes. If to its natural enemies we add man-made ones, the war-zone forest cannot stand against the onslaught. Within certain limits, man as well as Nature has a hand in determining where timber-line shall be. At least, we can see to it that there is no unholy anti-forest alliance between destructive man and the other (less ruinous?) forces of Nature. We wish you well, Chagoopa Forest!

* Lightning starts many fires; man starts more.

'There is a firing-line . . .

. . . and a wide war-zone in all our high altitudes"

TIMBER-LINE AND ADJACENT FOREST (FOXTAIL PINE) BETWEEN EAST FORK OF KERN RIVER AND TYNDALL CREEK

Altitude, upper photograph, 11,200 feet; lower photograph, 11,100 feet
Photos by Walter Mulford

WHITE-BARK PINE, NEAR JOHN MUIR TRAIL, SHEPARD CREEK CAÑON
(Altitude, 10,800 feet)
Photo by Walter Mulford

THE YOSEMITE CONY—A CHAPTER IN THE NATURAL HISTORY OF THE YOSEMITE NATIONAL PARK

By Joseph Grinnell and Tracy I. Storer

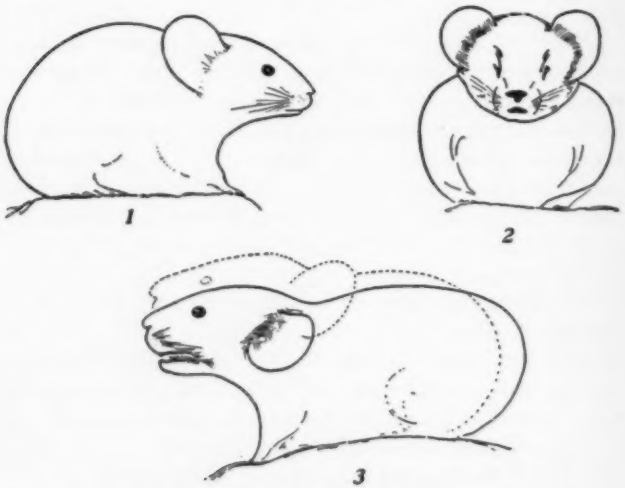
(Contribution from the Museum of Vertebrate Zoology of the University of California)

THE cold granite peaks and rock-walled glacial valleys of the higher Sierra Nevada of California are inhabited by comparatively few mammals and birds. The species which do live there throughout the year are, by structure and habits, well adapted to withstand the vicissitudes of life in a boreal region. On the whole, it seems as if these high mountain residents have come to fill the least desirable niches in the economy of nature, those niches for which there is but little contest. Among the mammals belonging to this category in the Yosemite National Park there is none more deserving of particular attention than the cony.

The cony is remotely related to the rabbits, but in both structure and habits it differs widely from those better-known animals. The cony is small, rarely exceeding seven inches in length of body, and it is of comparatively chubby build (figs. 1 and 2). The head is short and bluntly tapered, while the neck is scarcely distinguishable. The eyes are small, but the ears are large and rounded, and this combination gives the animal a peculiarly knowing expression. The fore and hind legs are short and of about equal length, while the tail is so reduced as not to be seen except by examination of a specimen in hand. The clothing of hair is thick and fluffy. The general coloration is grayish white, but to this in late summer and fall there is added, as a result of molt, a pale brown tint. At any season this coloration is doubtless exceedingly valuable to the animal in rendering it inconspicuous; even under the best of light conditions the observer finds difficulty in catching sight of a cony except when it moves.

Conies, otherwise known as pikas, rock-rabbits, or little chief hares, are found in the mountainous districts of Russia, Asia,

and northern North America. Each mountain system seems to have one or more kinds of these animals, and this is notably true of the mountains of California. In the Warner Mountains of Modoc County there is a distinct species, the Warner Mountain cony *(Ochotona taylori)*, and on the Sierra-Cascade range from Mount Shasta to Mount Whitney there are no less than three slightly different forms. The northernmost of these, the gray-headed cony *(Ochotona schisticeps schisticeps)*, is found



FIGS. 1-3. TYPICAL ATTITUDES OF THE CONY
1 and 2. On observation-post. 3. "Bleating." (About one-fourth life-size
Redrawn from field sketches made by Charles Lewis Camp)

from Mount Shasta south to the vicinity of Lake Tahoe; the southernmost one, the Mount Whitney cony *(Ochotona schisticeps albatus)*, occurs in the vicinity of the peak for which it is named; while the third, the Yosemite cony, occupies the higher portions of the Yosemite National Park and adjacent territory. This last form was discovered by the field parties of the California Museum of Vertebrate Zoology in 1915, when engaged in making a zoological survey of the Park. It has been named *Ochotona schisticeps muiri*, in remembrance of that most gifted of Sierran naturalists, John Muir.

The Yosemite cony is an alpine species, found only in the higher parts of the mountains above the fir belt, in the zone occupied by the alpine hemlock, white-bark pine, heather, and cassiope. Even within this narrow area it does not live everywhere, but is restricted to a single habitat, heaps or taluses of broken granite. Altitudinally, the cony is found, in the Yosemite National Park, as low as 7700 feet, near Glen Aulin, on the Tuolumne River; upward it ranges to about 12,000 feet, as on the slopes of Mount Dana, and to the very summit of Parsons Peak, 12,120 feet. But within this restricted area the cony is found in almost every glacial moraine and talus-heap. In one typical rock-slide, at the head of Lyell Cañon, our estimates indicated a population of at least one cony per 750 square yards. This would mean a population of about six per acre in suitable slide-rock. The range of an individual is short, probably rarely exceeding the boundaries of the rock-slide which the animal inhabits. While a cony will go some distance among rocks for food materials, it will not venture more than two or three yards beyond the limits of shelter.

The summer traveler in the mountains is first apprised of the presence of conies by hearing one of the animals utter its far-off-sounding "bleat." In fact, this note, or call, is such a valuable introductory aid that even the trained field observer finds that the only practicable means of locating the animals is to wait in a suitable locality and listen intently until one of them utters its call and then to scrutinize the area whence the sound came until its maker is discerned. This call is a moderately loud two- or three-syllabled utterance, and has a nasal intonation. The quality of the note is such as to suggest the clinking together of flakes of granite. It has been variously rendered by our field observers. One writes it, *yink, yink;* another, *ke-ack', ke-ack',* or *ke-ack', ke-ack', ke-ic'-ky;* and another, *e-chak', e-chak', chee-ick', chee-ick', chee-ick'-y.* Sometimes the call is uttered but once; again it may be repeated for ten or fifteen seconds, at first rapidly, then more slowly, as if the cony's breath was being gradually exhausted. The animal accompanies its calls with certain movements which seem essential to their production (figure 3). The whole body is jerked violently forward, as if considerable exertion were necessary to expel the air from the

lungs, and at the same time the ears are twitched upward, so that in face view their outlines catch the observer's eye.

For several months of each year snow covers everything within the range of the cony. The various species of animals which dwell there meet the resulting food scarcity in a number of different ways. Most of the birds emigrate, the deer and coyote descend to lower altitudes, the marmot hibernates, the gopher constructs tunnels through the snow, and the white-tailed jack-rabbit turns white and develops "snow-shoes" on its feet so that it can forage above the snow. But the cony has still another method of meeting the situation.

During the late summer and early autumn the cony is busy at all hours of the day gathering materials to serve as food while it is imprisoned among the rocks beneath the snow. It cuts and stores away grasses and sedges and other plants which grow in the vicinity of its home. These are carried into the rock-slides, and stored in a dry, well-drained, shady yet airy place, sheltered above from snow and rain, and free from the danger of running water below—an ideal barn from the standpoint of a farmer. This treatment is such as to preserve unfaded the natural colors of the dried plants, and the fragrance is that of well-cured hay free from mold. One such "hay-pile" seen by the senior author on Warren Peak, Mono County, September 26, 1915, was situated under a huge flat rock and comprised about half a cubic yard of material. Samples from a similar but smaller pile included twigs and needles of the lodgepole pine, sprigs of "ocean spray" *(Holodiscus discolor dumosa)*, two or more alpine species of sedge *(Carex)*, with their characteristically rough stems of triangular cross-section, a grass *(Poa)*, and an epilobium. The nearest sedge was twenty-five feet down-hill in a wet place, while the nearest holodiscus was at least seventy-five feet up the steep slope adjacent. Currant and red-elderberry bushes grew nearer than any of the other plants named, but neither had been touched, showing that the cony exercises some selection in the choice of its food materials.

When foraging the cony secures as large an amount of cut greens as can be held crosswise in its mouth and then carries the bundle to the "barn." Often stems of considerable length are transported in this manner, and, as the animal moves about,

A CONY AT THE MARGIN OF ITS ROCK-SLIDE HOME
Photo by H. S. Swarth

A TYPICAL OBSERVATION-POST OF THE CONY
Photo by T. I. Storer

the ends of these stems trail along beside or behind him. Many of the pieces found in the hay-piles were over a foot in length, and one piece of cut sedge measured forty-five inches in length; but this latter had been folded several times. A hay-pile seen near the head of the McClure fork of the Merced River contained nearly a bushel of material, and, judging from the fact that six adult-sized conies and one juvenile were trapped at this pile, it may be that hay-piles are community or at least family affairs.

While not foraging and not occupied beneath the surface of the slide, the cony sits hunched up, usually with its back higher than its head, in some protected place under a large overhanging rock. The post usually selected is the crest of a backward-slanting rock where the animal can enjoy a wide angle of view and yet be in a position, when danger threatens, to dart back into the shelter of the slide. These perches, or observation-posts, are marked by accumulations of droppings of an oblately spherical shape, like those of a rabbit but much smaller, and by whitish stains due to the action of the liquid excrement on the granite. When a cony comes to "attention" on an observation-post the head is often raised, the nose wiggled, and the feet "shuffled," all suggestive of mannerisms of a rabbit; but the movements of the head are much quicker. The hobbling gait reminds one somewhat of the hopping of a brush-rabbit. The cony moves rapidly and with apparent ease almost everywhere in a slide, even over very steep and smooth rock surfaces. We have never seen one of these animals assume the erect posture which is common to rabbits.

The cony shares its rock-slide home with the bushy-tailed wood-rat *(Neotoma cinerea cinerea)* and the Sierra marmot *(Marmota flaviventris sierrae)*, but we have learned nothing to indicate that these two large rodents molest the cony in any way. In the matter of enemies, there are only three carnivorous animals which dwell in the same situations as the cony and which we have reason to believe may prey upon it. These are the Sierra pine-marten *(Martes caurina sierrae)* and the least and mountain weasels *(Mustela muricus* and *Mustela arizonensis)*. At Vogelsang Lake, before sunrise of August 31, 1915, two conies were heard "bleating" vociferously as they ran excitedly

here and there among the rocks. Investigation showed the cause of the disturbance to be a least weasel. From the disturbance which these conies made, it was inferred that they had recognized the weasel as an enemy and were doing their best to spread the alarm among their neighbors. It is improbable that birds of prey, hawks and owls, levy much toll, because of the protected situation in which the cony lives; and there are no large snakes to search out and devour the animals, as would be the case if the latter lived at lower altitudes.

Conies seem to be most active during the early morning and evening hours; but they evince more or less activity at all times of the day, and they have been heard "bleating" on moonlight nights. They seem to enjoy coming out and running about or sitting on their observation-posts just as the afternoon shadows have begun to creep over the rock-slides. Sometimes they will sit quietly for considerable periods of time, and the observer must do likewise if he expects to catch sight of them.

As yet information concerning the breeding habits of the Yosemite cony is rather meager. We know that three or four young are produced at a time. The breeding season would seem to be rather extended, as in mid-July, 1915, young two-thirds to three-fourths grown were already abroad, while a number of the females had not yet given birth to their young. The young conies are notably precocious, and, like rabbits, begin to forage independently by the time they are only one-fourth to one-third grown.

To the critical reader the account here given will seem superficial and fragmentary, but it contains all we were able to find out during the few weeks spent by us in the home of the cony. A fascinating field for additional discovery lies at the disposal of those persons more fortunate than we who are able to visit the High Sierra year after year. The Sierra Club member who is not intent merely upon establishing a record in miles of trail covered will find in the painstaking study of the habits of the cony, as also of many another animal of the high mountains, enough to afford enjoyable and productive recreation for many summers.

Berkeley, California, October 10, 1916

THE SACRED MOUNTAIN OF CHINA

By Eunice Tietjens

TO CLIMB Tai Shan, the Most Sacred Mountain of China, is to store up a memory which no succeeding event can blur, nor can any western pride of accomplishment thereafter ever quite banish the oriental certainty that man is as the white breath of oxen in winter, and the little shadow that goeth before the sun. Other mountains, when one has climbed many, tend to grow indistinct in the memory. Their shapes blend and blur confusedly. But Tai Shan, in memory as in reality, is part of no chain of lesser mountains. It stands alone, surrounded by a little cluster of foothills, set down as arbitrarily as a child's toy mountain in the great brown plain of the Middle Kingdom. And in memory it will always seem that heaven is very near its summit.

For Tai Shan is the oldest place of continuous worship in the world. Its beauty is not so much the sheer, breath-taking beauty of nature as the piteous beauty of the eternal hope and aspiration in the soul of man. When we first find Tai Shan, in the dawn of one of the oldest histories of mankind, its origin as a place of worship is already legendary. In the days of Confucius, who lived five hundred years before Christ, men were already telling one another that since the birth of time heaven had been worshiped from the summit of the Most Sacred Mountain, and today thousands of their descendants in flapping coats of dark-green silk climb its rocky gorge each year, their women beside them borne in chairs or toiling in agony on their tiny tortured feet. Religions have come, flourished, and decayed, Buddhism, Confucianism, Taoism, Christianity, but still heaven is worshiped from the cloudy summit of Tai Shan.

There is something very beautiful and simple about the old Chinese conception which has remained till today in the worship on Tai Shan and in the Altar of Heaven in Peking. "Heaven" is quite impersonal, the great source of all blessing and of all malediction, the beginning and the end. But this pure form

is inevitably mixed with local superstitions and vagaries. Tai Shan has a god, of course. His name seems to be simply that of the mountain itself, Tai Shan. He is the rain-god, and, oddly enough to a western mind, the god of the stability of the earth's surface. But his daughter, the Goddess Pi-hsia-yuan-ch'un, Princess of Colored Clouds, is now more important than he. She is a Buddhist deity, the thousand-handed goddess of the dawn, and she has two acolytes, the "Goddess of Family Increase" and the "Goddess of Good Sight." It is to the latter that the Chinese women pray to prevent the dreaded ophthalmic blindness in their children.

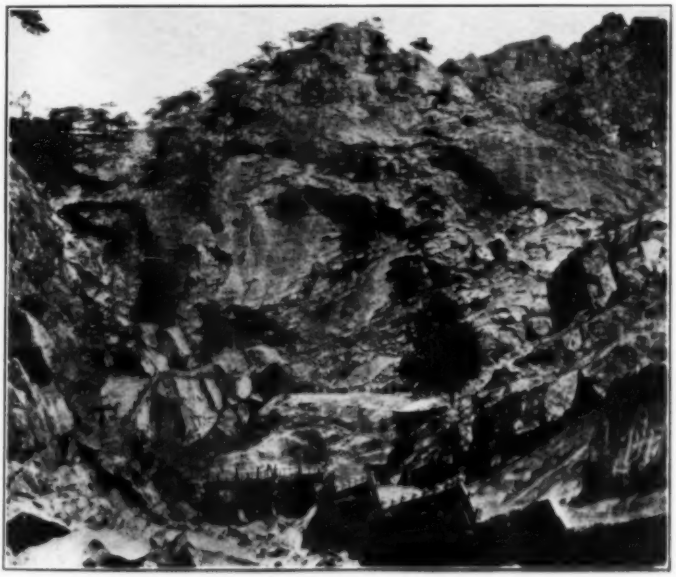
The beautiful temple with the golden roofs which crowns the summit—the rock which by nature was the highest point juts up in the center of a small courtyard—is dedicated to this goddess, and it is typical of the mixture of religions in China that, while the temple itself is Buddhist, the priests who serve in it today are Taoist. This temple is a modern affair, hardly two hundred years old, but some sort of an altar has been there for many centuries. The temple is now open only one day in the year, for the spring festival, and on that day the steep steps swarm with thousands of pilgrims of all stations in life. Many emperors have been among them, and the humblest is not forbidden.

From the standpoint of an experienced mountain-climber the ascent itself is insignificant, the height of the summit above the plain being hardly more than forty-five hundred feet, and the actual height between five and six thousand feet. Information of precision is very hard to find in China, but everyone is agreed that the distance along the trail is forty-two *li*, about fourteen miles.

This trail is really a small highway, about ten feet wide during the entire distance, and decorously paved. The latter part of the way, however, one is glad to walk on it, as it is cut out of the solid rock and climbs otherwise very difficult places. It contains six thousand steps.

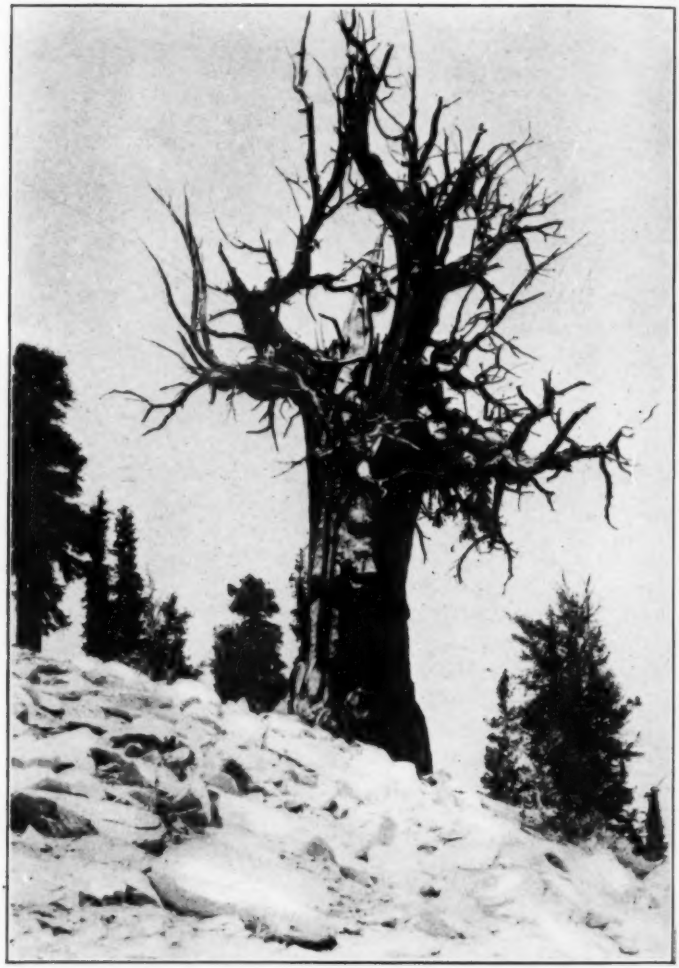
The foundation of the rock seems to be blue granite, which predominates largely, broken by ledges of white and pink quartz. But there are many colors among the stones that are built into the steps and line the trail. There are green stones

Buddhist Temple on the summit of Tai Shan



Station on the way up Tai Shan

TAI SHAN, THE SACRED MOUNTAIN OF CHINA



A GIANT FOXTAIL PINE ON SLOPE OF RED SPUR
Photo by Walter L. Huber

that look like malachite, bright purple stones, red stones, and brown stones. Many of them seem to be varieties of granite and are very hard, for the steps, which are very old, are hardly worn at all.

The vegetation consists mainly of a few scraggly evergreens and Japanesy pines, although on the lower reaches there are little cultivated patches, only a few feet square, where the beggars who live on the steep slopes raise vegetables and a little grain.

The usual way to go up Tai Shan is to start from Taian Fu, a town of about 30,000 people, and go up in bearer-chairs, little wicker seats swung between two poles and carried on the shoulders of two smiling, grunting, dirty coolies. Each chair has four men, two to carry and two who rest. A coolie receives for such a day's work the whole sum of sixty cents "mex," a little over a quarter.

The peculiar charm of a trip up Tai Shan lies in the combination of the pleasure of climbing for its own sake with the fascination of the Orient. After you have passed the arched gateway that begins the trail you pass an old, half-ruined temple, where you are shown a dried man, infinitely old and withered, ninety-four years old he was when he died, who sits in silk and solemnity in the temple courtyard. All the way along you pass at intervals similar temples, perched in crannies in the rock, where dwell Buddhist nuns with shaved heads, or little teahouses with strange names. "Tiger Lying Hall" was, I remember, the place where we ate our lunch. Part way up you pass a gateway inscribed "Horse Return Precipice," where presumably you part with your steed, though we saw nothing resembling a horse on the way. The temples also have charming names, "First Heaven Gate," "Half Heaven Gate," and, at the top of the steep rocky gorge which the trail follows all the latter part of the way, "South Heaven Gate."

The sides of the gorge are carved at frequent intervals with characters and inscriptions, in commemoration of pilgrimages made by a contemporary of Cleopatra, or a pious emperor of the Middle Ages, or even a wealthy silk merchant of today. "Where there is prayer there is answer," "Piety," and other religious sentiments are everywhere. One inscription reads:

"Confucius took this route." Another, of four characters, means literally, "Good, Emperor, Wind, Flows," and illustrates well the stenographic character of the Chinese language, for it means "A good emperor goes up like wind and flows down like water." This is in commemoration of a successful trip by some long-dead potentate.

Near the top is a precipice over which devotees used to throw themselves in a religious ecstasy to the rocks below. So great was the loss of life that the authorities have guarded the place with a high wall.

The climb itself is very gradual and not at all difficult till you reach the last stretch before the "South Heaven Gate" at the top of the rocky gorge. Here the steps are very high and very narrow, and travelers are wont to rest frequently. And here an amusing incident occurred to me. I had hired a chair in proper style, but I had not ridden in it at all on the way up, to the delight of my coolies, who thought me nothing less than half-witted to walk when I might have swung at ease. At this last stretch they had gone ahead of me and were waiting on the stairs. As I came up they all fell to clapping their hands and giving nasal grunts that sound like "haw" and mean "good." They smiled and flattered till I was forced to laugh, for I knew that, while part of it was surprise that a foreign lady could walk so far, the greater part of it was fear lest at the last minute I should show a white feather and climb into the chair. But I plodded on alone, and they applauded joyously.

After the "South Heaven Gate" the path tops the rocky gorge and turns out over a wide plateau, on which at a little distance stands the temple of the summit.

It is very clean and windy here. Below you on every side stretches the flat brown plain, like the floor of earth. In the foreground are green-flecked foothills and, beside you in this airy space, the sloping gold-tiled temple roofs. A black bird, like a crow, flies and circles over the blue abyss, and another bird calls from somewhere with a song like our bob-white.

Besides the temple, in the infinite spaciousness and peace where the great winds are, stands a broken and crumbling monument. Carved on it are the words, "On this spot once Confucius stood and felt the smallness of the world below." And though

the body of Confucius has lain these twenty-five hundred years in Chu Fu, his spirit stands today, eternally, on the summit of Tai Shan and looks out from the footstool of heaven over the smallness of man and his world.

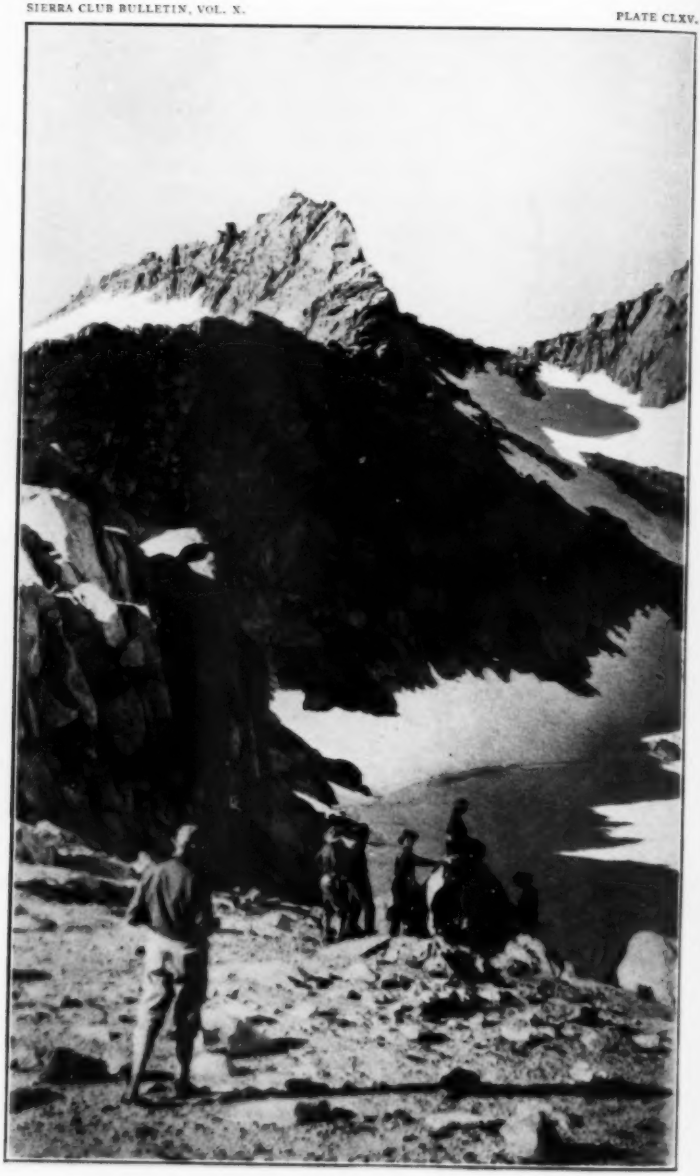
THE KERN RIVER OUTING OF 1916

By Jessie McGilvray Treat

THE weeks and months of anticipation were at an end, for the first of July had come at last, and we were actually started for Kern River Cañon. The Fates had decreed from the first moment that this should be the best outing ever taken by the Sierra Club. High fog, heaven-sent, made the much dreaded tramp through the foothills to Nelson's a delight. Inspired by that incomparable elation that comes when we can live each moment for the sheer joy of it, and measure our days only by our unrestrained pleasure and incessant delight, we swung up the trail, radiant. The path led up a closely covered foothill cañon, wooded with chaparral and occasional fine trees, now and then crossing rushing creeks which later poured into the South Fork of the Tule. An early luncheon close beside the stream, a drowsy half-hour stretched out in the shade listening to the ceaseless chatter of the swirling water, and then, refreshed, we pushed on to Nelson's. At this first camp all the old Sierrans graciously offered advice and assistance to the newcomers and the genial good-fellowship, which prevails throughout the outing, was at once manifest. Toward evening a rift in the fog gave us some idea of the beauty of the surrounding hills, and a rosy sunset glow promised a sunny morrow. This second day will be remembered by all forest-lovers, for our way was through superb sequoia groves on both sides of the Tule-Kern Divide. Fine specimens of sugar pine, yellow pine, and fir added variety. Then we followed down Freeman's Creek to Lloyd's Meadows, where we pitched our camp. Those who fortunately arrived early had the joy of a swim and developed great dexterity in catching the lemons which floated downstream from the soda-spring above, using them for manicure or shampoo, as fancy or necessity dictated.

Out of this meadow we climbed, a thousand feet, to drop down again to the ford of the Little Kern, where we all anticipated much amusement. Some waded across, the swift current

LITTLE KERN LAKE
Photo by Lawrence R. Kessing



A REST ON THE DESCENT OF SAWTOOTH
Photo by James Rennie

and rocky bed of the stream making it an uncertain pleasure; others were ferried across by a most obliging member, who made countless trips with two animals; while on the opposite bank were gathered those who had arrived earlier and were drying out. "Gabriel," our most picturesque donkey, was almost drowned in the stream, and his rescue added a thrill of excitement.

Wednesday a delightful six-mile tramp over the Kernbut brought us to Little Kern Lake, where we were to camp for several days. The real trip had begun; we had at last reached the Kern, our variable companion for several weeks to come. We should know its every mood, and part with it reluctantly. The fishermen here forgot their disappointment that this was the closed season for golden trout in their endeavors to catch the more familiar varieties. Lunch parties with trout cooked in the ashes or on a hot rock or in the less picturesque frying-pan were not infrequent. Excellent swimming in Little Kern Lake made the small sandy beach a gay and busy place every afternoon.

These days of lazy pleasure were soon over, and we journeyed up the cañon past Lower Funston Meadow to the point where the Big Arroyo tumbles down in white cascades to meet the Kern. This trip was a varied eleven miles between the precipitous walls of the cañon. The trail led now across talus slopes, now over grassy, sparkling meadows, then across swift-running torrents. Each day we became more adept at crossing foaming, noisy streams on slippery logs, but the one over Rattlesnake Creek was a wet and undulating sapling—a test of self-control and coordination. The Big Arroyo camp was almost surrounded by two rivers, and the Big Arroyo unkindly rose at such a rapid rate after sundown that a hasty evacuation of some of the most charming camp-sites was necessary.

On Sunday we zigzagged up a very steep slope toward the Chagoopa Plateau, frequently stopping for breath and to enjoy the ever-changing prospect down the Kern Cañon, so colorful with living shadows. Pushing on through a splendid forest, we suddenly came out into Sky-Parlor Meadow, too glorious a spectacle to describe or to forget, a wide-spread amphitheater, carpeted with flower-sprinkled green, encircled by dark pines

and crowned by solemn, jagged peaks and glacial cirques, notably Sawtooth, Needham, and the many-hued Kaweah group. Impossible as it seemed to leave this enchanting spot, our next camp, Moraine Lake, was near, and we promised ourselves the joy of coming often during our week's sojourn.

Moraine Lake is an ideal camp-site. Dense forest fringes the margin of this glacial basin. A clear, bubbling spring, icy cold, supplied delicious drinking-water, and, despite snow-hung mountains mirrored in the lake and the almost 10,000 feet of altitude, swimming was more than possible—it was enjoyable. This idyllic spot is centrally located for countless trips varying in degrees of strenuousness to suit any inclination.

> Then follow you, wherever hie
> The traveling mountains of the sky.
> Or let the streams in civil mode
> Direct your choice upon a road.

An evening walk to the edge of the ridge gave one a glorious comprehensive panorama from Mount Whitney, in the main crest beyond the Kaweahs, along a sharply broken sky-line of granite peaks in the Great Western Divide, to the unnamed snow-clad cirques just across the gorge. From the almost perpendicular walls of the Big Arroyo one seemed to be perched on the top of the world. A faint boom from the river far below throbbed in the evening stillness. As the long purple shadows filled this magnificent valley we hastened back to our forest-hidden camp, elusive even by day.

Here were six days brimful of pleasure. One hundred and forty intrepid ones climbed Kaweah Peak; knapsack parties journeyed off in all directions, some to Lost Cañon, Columbine Lake, and Sawtooth, some to Mount Needham; and toward the end of the week ardent hikers with bed and board on their backs journeyed up the Big Arroyo and across the Kern-Kaweah Divide, descending through the wonderful Kern-Kaweah Cañon to join the main party again at Junction Meadows. For those not so energetic there was still much to be done—fishing parties down at the Big Arroyo, dreamy days at Sky-Parlor Meadow, and swimming and fishing in Moraine Lake. History has it that once upon a time a mighty 8½-pound trout was caught there; but although many saw three gigantic beauties, neither secret

sorcery, hypnotism, nor fancy flies could lure them to impale themselves on any deadly hook.

As each day was more wonderful, so each night the spell of the camp-fire drew us closer into the magic circle. "Lost and found" were distributed with appropriate remarks, the trips described in terms of Colby or Tappaan miles; and then came a wide diversity of entertainment—interesting talks on birds, trees, glaciers, Alaska; singing of solos or *tout ensemble;* haunting melodies of flute and violin, peculiarly suited to these surroundings.

The annual Sierra Club Vaudeville given here in the forest theater was a high-class performance which brought out much talent—"Street Scenes in Venice," beautifully staged, was interrupted somewhat by temperamental "Gabriel"; music, skits, monologues, and even Shakespeare *à la mode,* were greeted with generous applause. Another day the bulletin-board announced that a bandana exhibition would take place, and all were urged to enter gaudy squares in this unique competition. Things of beauty were produced from grimy dunnage-bags—hand-woven brocades, block-printed silks, and oriental scarfs of much interest. The last evening found the commissary metamorphosed and we dined sumptuously and well at "Café Moraine," served by familiar faces rising above unfamiliar garments. The men had raided the women's camp and now appeared in flowered kimono, highland kilt, or prim shirt-waist.

A wealth of stirring memories is associated with this camp—the mysteriously fascinating eclipse of the moon, a "by request" violin concert on the sloping hillside near the spring, a vivid electrical storm over the upper Kern region—so it was with genuine regret that we left the Chagoopa Plateau to return to our former camp-site in Lower Funston Meadow for one night and then push on eleven miles to Junction Meadows.

This day we crossed the mighty Kern itself and proceeded to the upper end of the cañon, whose grandeur was enhanced by mighty sculptured walls and forbidding cliffs, culminating in minarets and domes, rushing streams, pouring at intervals from some side cañon, and occasional mistlike waterfalls, "like downward smoke, slow-dropping veils of thinnest lawn." Junction Meadows, where the Kern, Kern-Kaweah, and East Fork meet,

had been ravaged by a terrible tornado since the club camped there in 1912 and splendid trees were everywhere lying prone. The knapsackers returned, thrilled by the rare beauty of the upper Kern-Kaweah, and, animated by their glowing description, many decided to explore for themselves. It seemed as if some whim of creative force had hidden in this remote cañon at least one perfect form of every kind of mountain scenery, as a reward for those who persevere.

On Wednesday morning two hundred left for the Crabtree Meadows base camp to ascend Mount Whitney the following day. One hundred and seventy-five reached the summit, the largest party of mountaineers ever registered there. Those of us who remained below anxiously watched the angry clouds pile up in the direction of Mount Whitney on Thursday. A dark sky threatened rain, but only a few scattered drops fell at noon; the clouds soon dispersed, and these spatters were the only shower of the trip.

A long, steep pull out of Junction Meadows to the ridge, although exhilarating, brought with it a certain sorrow that here we must part with our many-mooded companion, the Kern. We consoled ourselves with the ever-changing panorama as we struggled on and up toward the crest. A glorious prospect was here presented. Peaks of the High Sierra, especially Mount Whitney, seemed broad, gently sloping masses, while Red Spur and the Kaweahs, now seen from the north, looked unapproachable and awe-inspiring. The Whitney climbers straggled across the upland meadows, each group content at times to nestle down among protecting rocks and scan the marvelous beauty radiating on all sides.

A desultory content had entered into the souls of most of us, with Mount Whitney, the highest peak in the United States, conquered; but at the Tyndall Creek camp those insatiable ones who must explore found Mount Tyndall and Mount Williamson challenging them to their best efforts. In the evening at the camp-fire all of us scrambled up Williamson's chimney, blistered our hands on the hot rocks, and pulled ourselves through the small "window" to the apex—vicariously.

Off early in the gray of Sunday morning, the crisp coldness of the air most stimulating, we were conscious that *this* day was

MORAINE LAKE
Photo by Walter L. Huber

THE CREST OF THE SIERRA, LOOKING SOUTH FROM MOUNT WHITNEY
Keeler Needles in foreground
Photo by Walter L. Huber

to bring the climax of the outing. Swinging up a gradual rise toward Shepard's Pass, we paused often to admire the wild majestic beauty of the Great Western Divide—Table Mountain, with its mesa-like summit, Thunder Mountain, dark and sulky, then farther southward that unique shaft of granite, Milestone. Suddenly, rounding a rocky crag, we were almost overwhelmed by the glorious spectacle before us—dazzling snow-fields with the trail descending in zigzags across their gleaming surface on toward a retreating cañon whose walls were hung with purple shadows. Farther down this rugged gorge opened out into Owens Valley, a shimmering desert, whose farther margin merged into the foothills of the Inyo Mountains, broken and undulating. Slowly we clambered down this slippery way to a pyramid of rocks which bore this significant message, written on a slip of paper: "Sierra Club, turn here and work toward the plateau covered with trees." Now the route became rock-work. Scrambling and jumping from boulder to boulder, we eventually reached the storm-beaten stunted pines cowering on the upper edge of the timber-line. Here we found ourselves on the recently completed portion of the John Muir Trail, one of the most worthy results of the Sierra Club's concerted efforts. At such an easy grade is the trail built that the ascent to the highest point, Junction Pass (13,200 feet), was surprisingly comfortable. This route from the Kern River basin over Shepard's and Junction passes into the Kings River watershed is through one of the most impressive and utterly wild regions of the High Sierra.

THE CREST OF THE SIERRA, LOOKING SOUTH FROM MOUNT WHITNEY
Keeler Needles in foreground
Photo by Walter L. Huber

At the summit of the pass, where all were to await information concerning the safety of the pack-train before advancing farther, we snuggled down among wind-breaking rocks and with the satisfaction that comes after such a climb serenely enjoyed the elemental wonder of it all. Spread before us in splendid diversity were alpine lakes, sparkling streams, glacial slopes, somber cañons, precipitous crags, grassy meadows, wind-swept forests, and silent peaks. On the left Mount Stanford loomed boldly, while to the right was a sharply serrated ridge culminating at intervals in peaks—Mount Keith, a few hundred feet higher than the pass, Mount Bradley, and finally University Peak. Above timber-line one is submitted to direct actinic rays and

kindly shade is hard to find. But out of the sun the wind was too cold, and the consumption of much variously flavored snow had made exercise desirable. When word came that the pack-train had crossed the first snow-fields and we could proceed to Vidette Meadows at our pleasure, small groups at once began to descend over a flinty trail toward the lovely lakes in Center Basin.

Encircling Center Peak, now towering high above us, we came upon an unnamed glacial lake, colorful and perfect. Mirrored in its waters were bluest sky, fleecy clouds, and snowy peak; its edges were beds of mossy green, flower-scattered. With East Vidette to beckon us, we pushed down toward our next camping-place, but each time we stopped to take our bearings that deceptive landmark seemed just as far away. In the late afternoon we arrived at the junction of Vidette and Bubbs creeks. A long and varied day was drawing to a close. Seventeen of the most wonderful miles ever traveled had been accomplished, and reluctantly we felt darkness creep upon us, as "by punctual eve the stars were lit."

But this Vidette camp at night was one of rarest beauty—here there was the silence of the High Sierra meadows uninterrupted save by an undertone from the smoothly flowing stream, "the floor of heaven . . . thick inlaid with patines of bright gold," and outlined against this glittering curtain towered that majestic pyramid, East Vidette.

From this location knapsack parties went to Mount Brewer or Rae Lake. The main camp became a scene of bustling activity; the weighing of food and stowing it in small bags; the sorting and packing and resorting of the "thirty-five pounds"; the trying-on of "packs" of food and bed, and attempting to persuade oneself that this unwieldy excrescence is a bundle of joy—all these occupations were everywhere in evidence. The much-heralded beauty of Rae Lake accounted for this restless uncertainty among us, and even the avowedly indolent were strongly tempted to try this one knapsack trip. Rumors of the difficulty of the trip varied widely. Some admitted Glenn Pass to be a stubborn climb through talus and heavy snow, while others promised a comfortable yet thrilling trip, possible to anyone who had survived so far. Fully fifty finally went, and

all of them confided to the "stay-at-homes" later that it had been worth the effort.

Good fishing in Bubbs Creek, East Creek, and Lake Charlotte; the opportunity to explore the upper reaches of Vidette Creek, with its well-concealed lakes; the walk down Bubbs Creek to the falls, or farther to the wooded ravine from which East Creek pours forth and where a fine view of Mount Brewer was to be had—these jaunts were compensation for the intimidated.

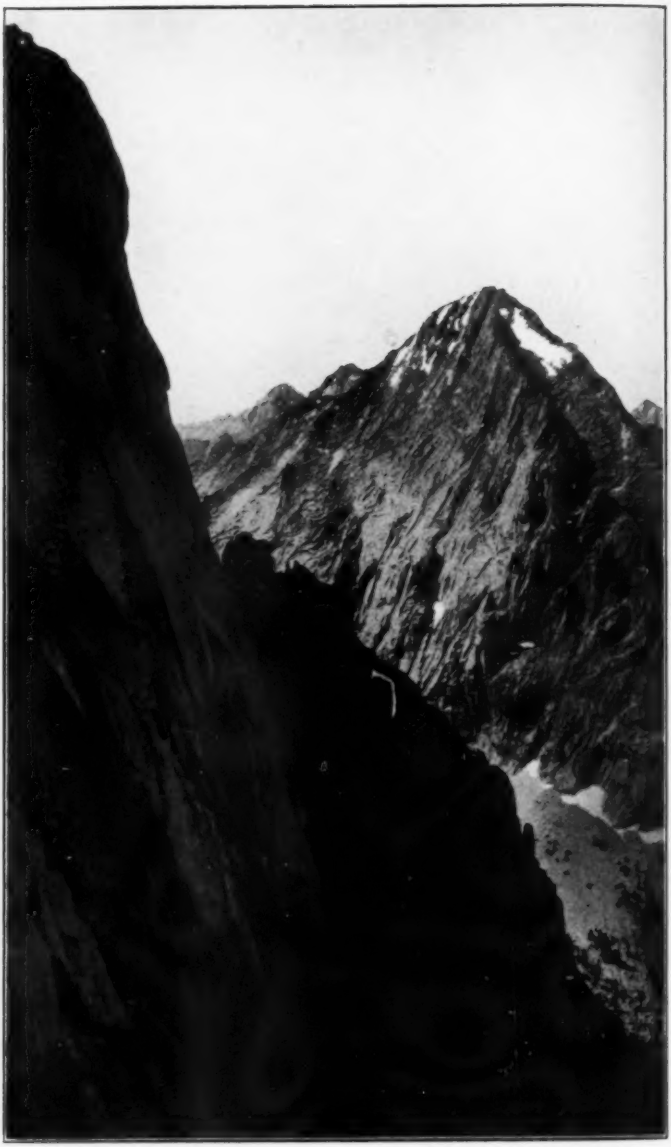
Thursday we moved camp a short distance to Sunset Lake, one of the chain of sparkling sapphire pools which lie at the base of Kearsarge Pinnacles. Many were off early to visit Lake Charlotte on the way, a delightful place to spend the day, with good fishing, and for those who went merely to "fry them in the pan" there was the additional interest of greeting the knapsack parties from Rae Lake and being the first appreciative audience. Reluctant we were to leave this heavenly spot, for tomorrow afternoon would find us in Independence, back among watermelons and white folks.

The last night in the mountains our commissary was established on a narrow neck of land between two lakes, and long before summons to dinner sounded there was "standing room only." After each knapsack trip, despite the glowing tales of scorched rice and superabundance of fish, the returned adventurers are always conspicuously first to dinner, and with heaping plate and brimming cup immediately go to the end of the line, in order to waste no time between first and second helpings. The evening air here was rather chill, and as the sunset glow faded from the tips of the Pinnacles all of us showed a decided preference for the camp-fire. It was a fitting climax to these characteristic gatherings that we should hear a chapter from John Muir's Florida diary, as yet unpublished. Little did we realize that on the morrow some of us would follow his example and find a comfortable camping-place in a cemetery. Then we sang "High, high, high," and hied ourselves to our sleeping-bags. Throughout the women's camp the fires sprang to life, reminding one of the old illustrations of Dante's masterpiece, each ledge with its flame dancing and changing and throwing mysterious shadow-figures. How grateful were these

glowing embers when at 4:30 the rising call sounded and we found ice in our water-buckets for the first time on the trip! With numb fingers we tied our dunnage-bags and rolled them down-hill for the last weigh-in.

Although we were early on the trail to Kearsarge Pass, silhouettes of earlier climbers were already outlined against the sky. From this famous pass another comprehensive panorama made us loath to be en route. The desert lay in misty haze. Directly below us was Pothole Lake, still frozen over; behind us, whence we came, was a marvelous wonderland of faintly flushed peaks, hung with snow and partly hidden alpine lakes. The discomforting assurance of an 8000-foot drop in our fifteen-mile tramp, and half of this distance across sand and sage, forced us to proceed downward. Passing by Pothole and Heart lakes, we came into Onion Valley, whose name belies it, for it was more truly a natural hanging garden where all mountain flowers bloomed in profusion. Especially fine was the delphinium, or giant larkspur. Following Pine Creek, we finally came to Independence, which eluded us as long as possible, and our weariness was forgotten in the reviving effect of fresh fruits and ice-cream. Our invasion on all food supplies will doubtless be remembered, and we hope the "preparedness" of the Ladies' Aid Society was amply rewarded. A day and a night on the train and on a Sunday morning we were back again among the worries and conveniences of every-day life. This month in the mountains is a singularly rich experience which "strengthens one's appreciation of the beautiful world out-of-doors and puts one in tune with the Infinite."

ON THE JOHN MUIR TRAIL.
Approaching Junction Pass from Shepard Creek
Photo by Walter Mulford



EAST VIDETTE, FROM THE FACE OF KEARSARGE PINNACLES
Photo by James Rennie

VIA DEER CREEK

By C. Nelson Hackett

NEITHER with fir nor cedar, with tamarack nor juniper does my story begin. No native branch do I lift up that ever the Sierra knew. I extol instead the *Citrus aurantium,* whose golden fruit made pleasant all our journey from the Big Arroyo to Bearpaw Meadow, though partaken of but once, and it divided. How sweet were the influences shed by that inceptive orange you of the cult will readily believe when I relate to you the facts.

We were seated in a saddle of the Great Western Divide, the headwaters of the Big Arroyo on one side and the source of Deer Creek on the other. Below us in one of the last clumps of trees we had lighted our camp-fire the night before, and there we had slept in its smoke through the chill night and had eaten thirst-provoking porridge and bacon that morning. Ray Bailey's party, with which we had come from Moraine Lake, around the base of the Kaweahs and down into the glorious Arroyo the previous day, was just disappearing on its way to the Kern-Kaweah Cañon. At that moment Walter Huber, my sole companion, loosed his pack and produced therefrom, with all the dramatic surprise of an ex-silk-hat-enter-Mr. Rabbit, a marvelous orange. Since that moment its donor has been to me a canonized saint. The aureole is round his blessed pate and the symbolic citrus in his hand shows still in memory huge as the blue-ribboned ones in the convex jars at a county fair.

The sun was at our backs as we began a descent which was to lower us with neither instancy nor ease from a height of 10,600 to 7000 feet. In the beginning it was almost all snow, and all that was not snow was talus. There was a tiny pond, all frozen, where Deer Creek begins, and then a larger lakelet, with winter's seal upon it, too, though cracked and broken. With every step the cañon widened, the bare cliffs lifted their brows more awesomely. Suddenly we stepped out onto the brink of the bottomless pit. Black and wet and sheer are the cliffs by

which mere man must clamber down sixteen hundred feet to the third lake of Deer Creek. This is the chief difficulty between the Kern and the Giant Forest, and the trail-builder will have his task.

My pack was small, but I felt as if I were trying to carry a wardrobe trunk down a winding stair without damaging the plaster. For some time one of us had been going ahead and receiving the two packs which the other handed down to him, when it occurred to me that it would be feasible to let my pack slide ahead of me for ten or fifteen feet. A wild mountain sheep could not have sprung from my grasp with a more lifelike leap —one bound to leave the ledge, another to clear the cliff, and out it spun into the blue, and then down, down. . . . At the base of the cliffs a little stream ran out between high banks of snow. There, on a rock in the midst, like a wet cormorant sunning, I found my much-cursed pack an hour later.

Gerhart Hauptmann, speaking of mysteries in secret societies, says, "Even children possessing a secret in common swell with a sense of importance." To overcome this childish feeling is difficult in remembering the lake we now approached, which is one of nature's most precious revelations to what can be the merest handful of men. The arcana of all societies, from ancient Eleusis to a modern Skull and Crossbones, seem paltry by comparison. With a great apostle, I can say, "Behold, I show you a mystery." Down five hundred feet and more, over cliffs which make dawn late, half a dozen cascades shake their silver ribbons. Groups of stately pines stand on the margin of the lake. From its northern edge rise granite cliffs of marvelous sculpturing. At its northwest end its green and blue waters flow out in a slow and limpid stream through a magnificent forest. Every puddle in Italy, every pond in New England—even the waterless hollows of the moon—have their names, but this glorious lake lies flashing in the summer sun, unnamed, almost unknown.

From this lake (Lake San Graal I think I shall call it until a more authoritative christening) there is no royal highway down Deer Creek. We tried the cliffs to the right, failed, moved a short distance through brake-fern higher than our heads, then through a wildwood tangle, crossed the creek on a log where the

final "r" of "Deer" is on the Government map, tried the cliffs of the south side, and then finally made for a place down-stream some three-quarters of a mile, where the creek again ran into a forest and gave promise that the jungle there would cease. In the meantime it was a hand-to-branch encounter. Underfoot was tippy talus concealed largely by vines. Manzanita did the low tackling, while elder and deer-brush slashed at our faces in front or at our packs from behind. Nor did the sun forget to concentrate his rays on our perspiring foreheads.

Our destination was Bearpaw Meadow, where we expected to meet two fellow-Sierrans who were coming in from the Giant Forest to join the main party. We might now have followed on down the cañon to Wet Meadow and climbed up to Bearpaw by trail. Preferring, however, to keep grade, we followed up the right bank of the Kaweah River. From Lone Pine Meadow down to its confluence with Deer Creek this branch of the Kaweah is almost one long cascade. We spent the afternoon climbing up ledges or burrowing through brush without finding a place at which the stream could be forded. But when we surmounted the eight-thousand-foot contour we came out into a wide swale and there gingerly crossed the river on a snow bridge just below the point where it bends to the east. At once we hit the trail from Lone Pine to Bearpaw. Kipling speaks of "the trail that is always new," but in a sense the trail is also always old. That late afternoon, certainly, after our contest with the wilderness, the trail seemed something ancient and familiar and full of comfort. We were glad to set our feet in the way that other human feet had trod.

Like the hanging gardens of Babylon is Bearpaw Meadow—a part of the slope of the mountain, 1500 to 2000 feet above the Kaweah River. Its long grassy slope, filled with aspens and wild flowers, is watered by little streams that flow across it down the mountainside. Our expected friends did not meet us, and we broke our hardtack in disappointment.

I remember no more glorious pageant than we witnessed from Bearpaw that evening. Down Kaweah Cañon and far on to the west we saw the hot San Joaquin Valley, covered with a dark haze, the sunset sky above it splendid with a tarnished but royal crimson, "the excess of glory obscured," like Satan new-

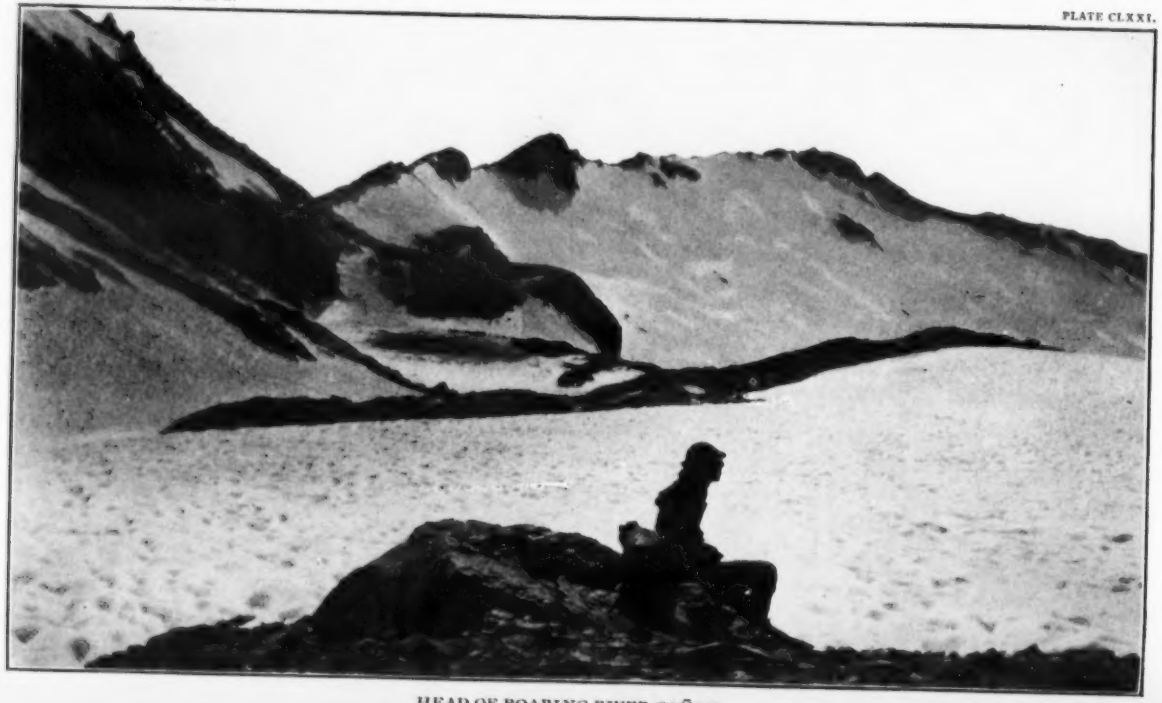
fallen from Paradise. To the eastward rose the ridges of the Great Western Divide over which we had come. A silvery mist veiled their bases and caused the snowy peaks above to tower with sublimated loftiness.

The warmer days and richer soil of the western side of the range have had a magnifying effect on the flora. Coming back to Lone Pine the next morning, we noted the huge trees of that great overripe forest and, wherever there was a soggy green, the blossoms of the shooting-stars, or cyclamens.

Our object in recrossing the Great Western Divide was Junction Meadows. We did not therefore attempt to return by way of Deer Creek, but chose Triple Divide and the Kern-Kaweah Cañon instead. The waterfall that brings down a tributary to Lone Pine Creek, and the splendid cascade a little farther up on Lone Pine itself, should be starred. We passed Tamarack Lake on the north. A steep climb and we came into a great open theater filled with acres of snow and surrounded by seemingly impregnable walls. Due east across it we went and up over the black cliffs, which on near approach showed considerable plant life. We kept near the little stream that comes down from Lion Lake. Long ridges of granite boulders, arranged like Prussian trenches, so that each seemed to be, but was not, the last, had to be crossed before we reached Lion Lake with its subterranean outlet. High above it we kept, crossed a 12,000-foot pass, swung around a shoulder of loose cinderlike shale, and came upon Glacier Lake at the head of Cloudy Cañon. We kept on eastward and upward, over a long hummock-filled snow-field, and exulted at last to stand on the pass beside Triple Divide Peak. We were now above the Kern-Kaweah, and the rest seemed certain and easy. But still there remained snow and rocks, and rocks and snow. Finally, getting down to the river proved a problem, and only after considerable time lost in vain attempts did we find a ledge and a talus-pile that took us to the bottom. As we floundered down the Kern-Kaweah through the snow and icy slush, our appreciation of its glories was a little dimmed by weariness.

We camped that night within a couple of miles of the main party, darkness having shut down on us. We cooked no supper. We unrolled our beds in the very trail. A fire at our feet was

NINE-LAKE BASIN, AT THE HEAD OF BIG ARROYO
Photo by Walter L. Huber



HEAD OF ROARING RIVER CAÑON
Photo by Walter L. Huber

all our labor. So much snow and rock work and the difficulty of two passes over 12,000 feet each had caused a weariness that induced sleep instantly.

Now, although the downy couch of the city had supplanted the rocky cradle of the wilderness, the poppy-crowned goddess approaches with a greater deliberation. In that interval there sometimes flashes on my mind something seen on that trip to Bearpaw, and especially on Deer Creek. And if I dream, it is not of a great highway from New York to San Francisco, wonderful as that would be, but of a mere trail instead. It runs by way of Deer Creek, and its pilgrims saunter upward from the solemnity of the Giant Forest to the grandeur of the Big Arroyo.

HEAD OF ROARING RIVER CAÑON
Photo by Walter L. Huber

STUDIES IN THE SIERRA*

By John Muir

NO. III. ANCIENT GLACIERS AND THEIR PATHWAYS

THOUGH the gigantic glaciers of the Sierra are dead, their history is indelibly recorded in characters of rock, mountain, cañon, and forest; and, although other hieroglyphics are being incessantly engraved over these, "line upon line," the glacial characters are so enormously emphasized that they rise free and unconfused in sublime relief, through every after inscription, whether of the torrent, the avalanche, or the restless heaving atmosphere.

In order to give the reader definite conceptions of the magnitude and aspect of these ancient ice-rivers, I will briefly outline those which were most concerned in the formation of Yosemite Valley and its cañon branches. We have seen (in the previous paper)† that Yosemite received the simultaneous thrust of the Yosemite Creek, Hoffmann, Tenaya, South Lyell, and Illilouette glaciers. These welded themselves together into one huge trunk, which swept down through the valley, receiving small affluents in its course from Pohono, Sentinel, and Indian cañons, and those on both sides of El Capitan Rock. At this period most of the upper portions of the walls of the valley were bare; but during its earliest history, the wide mouths of these several glaciers formed an almost uninterrupted covering of ice. All the ancient glaciers of the Sierra fluctuated in depth and width, and in degree of individuality, down to the latest glacial days. It must, therefore, be distinctly borne in mind that the following sketches of these upper Merced glaciers relate only to their separate condition, and to that phase of their separate condition which they presented toward the close of the period when Yosemite and its branches were works nearly accomplished.

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* Reprinted from the *Overland Monthly* of July, 1874. This is the third of a series of seven studies in which Mr. Muir developed his theories of the geology of the Sierra.—*Editor.*

† Reprinted in Sierra Club Bulletin, Vol. X, No. 1, January, 1916.

YOSEMITE CREEK GLACIER

The broad, many-fountained glacier to which the basin of Yosemite Creek belonged, was about fourteen miles in length by four in width, and in many places was not less than a thousand feet in depth. Its principal tributaries issued from lofty amphitheatres laid well back among the northern spurs of the Hoffmann range. These at first pursued a westerly course; then, uniting with each other and absorbing a series of small affluents from the Tuolumne divide, the trunk thus formed swept round to the south in a magnificent curve, and poured its ice into Yosemite in cascades two miles wide. This broad glacier formed a kind of wrinkled ice-cloud. As it grew older, it became more regular and riverlike; encircling peaks overshadowed its upper fountains, rock islets rose at intervals among its shallowing currents, and its bright sculptured banks, nowhere overflowed, extended in massive simplicity all the way to its mouth. As the ice-winter drew near a close, the main trunk, becoming torpid, at length wholly disappeared in the sun, and a waiting multitude of plants and animals entered the new valley to inhabit the mansions prepared for them. In the meantime the chief tributaries, creeping slowly back into the shelter of their fountain shadows, continued to live and work independently, spreading moraine soil for gardens, scooping basins for lakelets, and leisurely completing the sculpture of their fountains. These also have at last vanished, and the whole basin is now full of light. Forests flourish luxuriantly over all its broad moraines, lakes and meadows nestle among its domes, and a thousand flowery gardens are outspread along its streams.

HOFFMANN GLACIER

The short, swift-flowing Hoffmann Glacier offered a striking contrast to the Yosemite Creek, in the energy and directness of its movements, and the general tone and tendencies of its life. The erosive energy of the latter was diffused over a succession of low boulderlike domes. Hoffmann Glacier, on the contrary, moved straight to its mark, making a descent of 5000 feet in about five miles, steadily deepening and contracting its current, and finally thrusting itself against the upper portion of Yosemite in the form of a wedge of solid ice, six miles in length by

four in width. The concentrated action of this energetic glacier, combined with that of the Tenaya, accomplished the greater portion of the work of the disinterment and sculpture of the great Half Dome, North Dome, and the adjacent rocks. Its fountains, ranged along the southern slopes of the main Hoffmann ridge, gave birth to a series of flat, wing-shaped tributaries, separated from one another by picturesque walls built of massive blocks, bedded and jointed like masonry. The story of its death is not unlike that of the Yosemite Creek, though the declivity of its channel and equal exposure to sun-heat prevented any considerable portion from passing through a torpid condition. It was first burned off on its lower course; then, creeping slowly back, lingered a while at the base of its mountains to finish their sculpture, and encircle them with a zone of moraine soil for gardens and forests.

The gray slopes of Mount Hoffmann are singularly barren in aspect, yet the traveler who is so fortunate as to ascend them will find himself in the very loveliest gardens of the Sierra. The lower banks and slopes of the basin are plushed with chaparral rich in berries and bloom—a favorite resort for bears; while the middle region is planted with the most superb forest of silver-fir I ever beheld. Nowhere are the cold footsteps of ice more warmly covered with light and life.

TENAYA GLACIER

The rugged, strong-limbed Tenaya Glacier was about twelve miles long, and from half a mile to two and a half miles wide. Its depth varied from near 500 to 2000 feet, according as its current was outspread in many channels or compressed in one. Instead of drawing its supplies directly from the summit fountains, it formed one of the principal outlets of the Tuolumne *mer de glace*, issuing at once from this noble source, a full-grown glacier two miles wide and more than a thousand feet deep. It flowed in a general southwesterly direction, entering Yosemite at the head, between Half and North domes. In setting out on its life-work it moved slowly, spending its strength in ascending the Tuolumne divide, and in eroding a series of parallel sub-channels leading over into the broad, shallow basin of Lake Tenaya. Hence, after uniting its main current, which

had been partially separated in crossing the divide, and receiving a swift-flowing affluent from the fountains of Cathedral Peak, it set forth again with renewed vigor, pouring its massive floods over the southwestern rim of the basin in a series of splendid cascades; then, crushing heavily against the ridge of Clouds Rest, curved toward the west, quickened its pace, focalized its wavering currents, and bore down upon Yosemite with its whole concentrated energy. Toward the end of the ice-period, and while the upper tributaries of its Hoffmann companion continued to grind rock-meal for coming forests, the whole body of Tenaya became torpid, withering simultaneously from end to end, instead of dying gradually from the foot upward. Its upper portion separated into long parallel strips extending between the Tenaya basin and Tuolumne *mer de glace*. These, together with the shallow ice-clouds of the lake-basin, melted rapidly, exposing broad areas of rolling rock-waves and glossy pavements, on whose channelless surface water ran everywhere wild and free. There are no very extensive morainal accumulations of any sort in the basin. The largest occur on the divide, near the Big Tuolumne Meadows, and on the sloping ground northwest of Lake Tenaya.*

For a distance of six miles from its mouth the pathway of this noble glacier is a simple trough from 2000 to 3000 feet deep, countersunk in the solid granite, with sides inclined at angles with the horizon of from thirty to fifty degrees. Above this its grand simplicity is interrupted by huge moutonéed ridges extending in the general direction of its length over into the basin of Lake Tenaya. Passing these, and crossing the bright glacial pavements that border the lake, we find another series of ridges, from 500 to 1200 feet in height, extending over the divide to the ancient Tuolumne ice-fountain. Their bare moutonéed forms and polished surfaces indicate that they were overswept, existing at first as mere boulders beneath the mighty glacier that

* Because the main trunk died almost simultaneously throughout its whole extent, we, of course, find no terminal moraines curved across its channels; nor, since its banks were in most places too steeply inclined for their disposition, do we find much of the two laterals. One of the first Tenaya glacierets was developed in the shadow of Yosemite Half Dome. Others were formed along the bases of Coliseum Peak, and the long, precipitous walls extending from near Lake Tenaya to the Big Tuolumne Meadows. The latter, on account of the uniformity and continuity of their protecting shadows, formed moraines of considerable length and regularity, that are liable to be mistaken for portions of the left lateral moraine of the main glacier.

flowed in one unbroken current between Cathedral Peak and the southeast shoulder of the Hoffmann range.

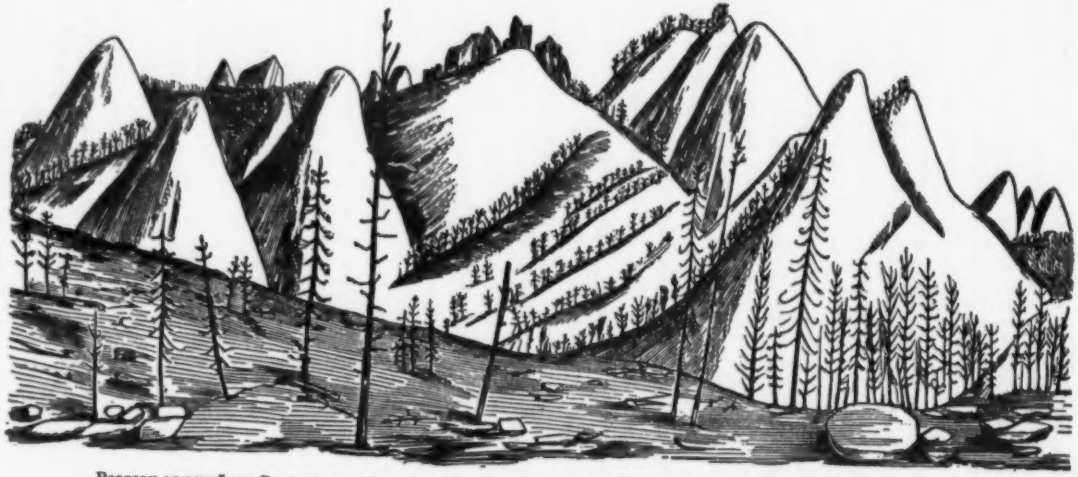
NEVADA, OR SOUTH LYELL GLACIER

The South Lyell Glacier was less influential than the last, but longer and more symmetrical, and the only one of the Merced system whose sources extended directly to the main summits on the axis of the chain. Its numerous ice-wombs, now mostly barren, range side by side in three distinct series at an elevation above sea-level of from 10,000 to 12,000 feet. The first series on the right side of the basin extends from the Matterhorn to Cathedral Peak in a northwesterly direction a distance of about twelve miles. The second series extends in the same direction along the left side of the basin in the summits of the Merced group, and is about six miles in length. The third is about nine miles long, and extends along the head of the basin in a direction at right angles to that of the others, and unites with them at their southeastern extremities. The three ranges of summits in which these fountains are laid, and the long continuous ridge of Clouds Rest, enclose a rectangular basin, leaving an outlet near the southwest corner opposite its principal *névé* fountains, situated in the dark jagged peaks of the Lyell group. The main central trunk, lavishly fed by these numerous fountains, was from 1000 to 1400 feet in depth, from three-fourths of a mile to a mile and a half in width, and about fifteen miles in length. It first flowed in a northwesterly direction for a few miles, then curving toward the left, pursued a westerly course, and poured its shattered cascading currents down into Yosemite between Half Dome and Mount Starr King.

Could we have visited Yosemite toward the close of the glacial period, we should have found its ice-cascades vastly more glorious than their tiny water representatives of the present hour. One of the most sublime of these was formed by that portion of the South Lyell current which descended the broad, rounded shoulder of Half Dome. The whole glacier resembled an oak with a gnarled swelling base and wide-spreading branches. Its banks, a few miles above Yosemite, were adorned with groups of picturesque rocks of every conceivable form and mode of combination, among which glided swift-descending af-

fluents, mottled with black slates from the summits, and gray granite blocks from ridges and headlands. One of the most interesting facts relating to the early history of this glacier is, that the lofty cathedral spur forming the northeast boundary of its basin was broken through and overflowed by deep ice-currents from the Tuolumne region. The scored and polished gaps eroded by them in their passage across the summit of the spur, trend with admirable steadiness in a northeasterly and southwesterly direction; a fact of great importance, considered in its bearings upon questions relating to the universal ice-sheet. *Traces of a similar overflow from the northeast occur on the edges of the basins of all the Yosemite glaciers.*

The principal moraines of the basin occur in short, irregular sections scattered along the sides of the valleys, or spread in rough beds in level portions of their bottoms, without manifesting subordination to any system whatever. This fragmentary condition is due to interruptions caused by portions of the sides of the valleys being too precipitous for moraine matter to rest upon and to breakings and down-washings of torrents and avalanches of winter snow. The obscurity resulting from these causes is further augmented by forests and underbrush, making a patient study of details indispensable to the recognition of their unity and simple grandeur. The south lateral moraine of the lower portion of the trunk may be traced about five miles, from the mouth of the north tributary of Mount Clark to the cañon of Illilouette, though simplicity of structure has in most places been prevented by the nature of the ground and by the action of a narrow margin glacier which descended against it with variable pressure from cool, shadowy slopes above. The corresponding section of the right lateral, extending from the mouth of Cathedral tributary to Half Dome, is far more perfect in structure, because of the evenness of the ground, and because the ice-wing which curved against Clouds Rest and descended against it was fully exposed to the sun, and was, therefore, melted long before the main trunk, allowing the latter to complete the formation of this section of its moraine undisturbed. Some conception of its size and general character may be obtained by following the Clouds Rest and Yosemite trail, which crosses it obliquely, leading past several cross-sec-



PORTION OF THE LEFT BANK OF THE CHANNEL OF THE SOUTH LYELL GLACIER, NEAR THE MOUTH OF CATHEDRAL TRIBUTARY

AT THE FOOT OF KEARSARGE PINNACLES
Photo by Philip S. Carlton

POTHOLE LAKE AND UNIVERSITY PEAK
Photo by Walter L. Huber

tions made by small streams. A few slate boulders from the Lyell group may be seen, but the main mass of the moraine is composed of ordinary granite and porphyry, the latter having been derived from Feldspar and Cathedral valleys.

The elevation of the top of the moraine near Cathedral tributary is about 8100 feet; near Half Dome, 7600. It rests upon the side of the valley at angles varying from fifteen to twenty-five degrees, and in many places is straight and uniform as a railroad embankment. The greatest depth of the glacier between Clouds Rest and Mount Starr King, measuring from the highest points of its lateral moraines, was 1300 feet. The recurrence of ridges and terraces on its sides indicate oscillations in the level of the glacier, probably caused by clusters of cooler or snowier seasons which no doubt diversified the great glacial winter, just as clusters of sunny or stormy days occasion fluctuations in the level of the streams and prevent monotony in our annual winters. When the depth of the South Lyell Glacier diminished to about 500 feet, it became torpid, on account of the retardation caused by the roughness and crookedness of its channel. But though it henceforth made no farther advance of its whole length, it possessed feeble vitality—in small sections, of exceptional slope or depth, maintaining a squirming and swedging motion, while it lay dying like a wounded serpent. The numerous fountain wombs continued fruitful long after the lower valleys were developed and vitalized with sun-heat. These gave rise to an imposing series of short residual glaciers, extending around three sides of the quadrangle basin, a distance of twenty-four miles. Most of them have but recently succumbed to the demands of the changing seasons, dying in turn, as determined by elevation, size, and exposure. A few still linger in the loftiest and most comprehensive shadows, actively engaged upon the last hieroglyphics which will complete the history of the South Lyell Glacier, forming one of the noblest and most symmetrical sheets of ice manuscripts in the whole Sierra.

ILLILOUETTE

The broad, shallow glacier that inhabited the basin of Illilouette more resembled a lake than a river, being nearly half as wide as it was long. Its greatest length was about ten miles,

and its depth perhaps nowhere much exceeded 700 feet. Its chief fountains were ranged along the western side of the Merced spur at an elevation of about 10,000 feet. These gave birth to magnificent affluents, flowing in a westerly direction for several miles, in full independence, and uniting near the center of the basin. The principal trunk curved northward, grinding heavily against the lofty wall forming its left bank, and finally poured its ice into Yosemite by the South Cañon between Glacier Point and Mount Starr King. All the phenomena relating to glacial action in this basin are remarkably simple and orderly, on account of the sheltered positions occupied by its principal fountains with reference to the unifying effects of ice-currents from the main summits of the chain. A fine general view, displaying the principal moraines sweeping out into the middle of the basin from Black, Red, Gray, and Clark mountains may be obtained from the eastern base of the cone of Starr King. The right lateral of the tributary which took its rise between Red and Black mountains is a magnificent piece of ice-work. Near the upper end, where it is joined to the shoulder of Red Mountain, it is 250 feet in height, and displays three well-marked terraces. From the first to the second of these, the vertical descent is eighty-five feet, and inclination of the surface fifteen degrees; from the second to the third, ninety-five feet, and inclination twenty-five degrees; and from the third to the bottom of the channel, seventy feet, made at an angle of nineteen degrees. The smoothness of the uppermost terrace shows that it is considerably more ancient than the others, many of the blocks of which it was composed having crumbled to sand.

A few miles farther down, the moraine has an average slope in front of about twenty-seven degrees, and an elevation above the bottom of the channel of six hundred and sixty-six feet. More than half of the side of the channel from the top is covered with moraine matter, and overgrown with a dense growth of chaparral, composed of manzanita, cherry, and castanopsis. Blocks of rose-colored granite, many of them very large, occur at intervals all the way from the western base of Mount Clark to Starr King, indicating exactly the course pursued by the ice when the north divide of the basin was overflowed, Mount

Clark being the only source whence they could possibly have been derived.

Near the middle of the basin, just where the regular moraines flatten out and disappear, there is outspread a smooth gravel slope, planted with the olive-green *Arctostaphylos glauca* so as to appear in the distance as a delightful meadow. Sections cut by streams show it to be composed of the same material as the moraines, but finer and more water-worn. The main channel, which is narrow at this point, appears to have been dammed up with ice and terminal moraines, thus giving rise to a central lake, at the bottom of which moraine matter was re-ground and subsequently spread and leveled by the impetuous action of its outbreaking waters. The southern boundary of the basin is a strikingly perfect wall, extending sheer and unbroken from Black Mountain* to Buena Vista Peak, casting a long, cool shadow all through the summer for the protection of fountain snow. The northern rim presents a beautiful succession of smooth undulations, rising here and there to a dome, their pale gray sides dotted with junipers and silver-leafed pines, and separated by dark, feathery base-fringes of fir.

The ice-plows of Illilouette, ranged side by side in orderly gangs, have furrowed its rocks with admirable uniformity, producing irrigating channels for a brood of wild streams, and abundance of deep, rich soils, adapted to every requirement of garden and grove. No other section of the Yosemite uplands is in so high a state of glacial cultivation. Its clustering domes, sheer walls, and lofty towering peaks, however majestic in themselves, are only border adornments, submissively subordinate to their sublime garden center. The basins of Yosemite Creek, Tenaya, and South Lyell are pages of sculptured rocks embellished with gardens. The Illilouette basin is one grand garden embellished with rocks.

Nature manifests her love for the number five in her glaciers, as well as in the petals of the flowers which she plants in their pathways. These five Yosemite glaciers we have been sketching are as directly related to one another, and for as definite an object, as are the organs of a plant. After uniting in

* This mountain occurs next south of Red Mountain, and must not be confounded with the Black Mountain six miles farther south.

the valley, and expending the down-thrusting power with which they were endowed by virtue of the declivity of their channels, the trunk flowed *up out of* the valley without yielding much compliance to the crooked and comparatively small river cañon extending in a general westerly direction from the foot of the main valley. In effecting its exit a considerable ascent was made, traces of which are to be seen in the upward slope of the worn, rounded extremities of the valley walls. Down this glacier-constructed grade descend both the Coulterville and Mariposa trails; and we might further observe in this connection that, because the ice-sheet near the period of transition to distinct glaciers flowed southwesterly, the south lips of all Yosemites trending east and west, other conditions being equal, are more heavily eroded, making the construction of trails on that side easier. The first trail, therefore, that was made into Yosemite, was of course made down over the south lip. The only trail entering the Tuolumne Yosemite descends the south lip, and so also does the only trail leading into the Kings River Yosemite. A large majority of deer and bear and Indian trails likewise descend the south lips of Yosemites. So extensively are the movements of men and animals controlled by the previous movements of certain snow-crystals combined as glaciers.

The direction pursued by the Yosemite trunk, after escaping from the valley, is unmistakably indicated by its immense lateral moraines extending from its lips in a west-southwesterly direction. The right moraine was disturbed by the large tributary of Cascade Creek, and is extremely complicated in structure. The left is simple until it comes under the influence of tributaries from the southeast, and both are further obscured by forests which flourish upon their mixed soil, and by the washing of rains and melting snows, and the weathering of their boulders, making a smooth, sandy, unmorainelike surface. It is, therefore, the less to be wondered at that the nature of these moraines, which represent so important a part of the chips hewn from the valley in the course of its formation, should not have been sooner recognized. *Similarly situated moraines extend from the lips of every Yosemite* wherever the ground admits of their deposition and retention. In Hetch-Hetchy and other smaller and younger Yosemites of the upper Merced, the as-

cending *striæ* which measure the angle of ascent made by the bottom of their glaciers in their outflow are still clearly visible.

Fig. 1 is the horizontal section of the end of a Yosemite valley, showing the ordinary boat-shaped edge, and lateral moraines (M M) extending from the lips. The moraines and arrows indicate the course pursued by the outflowing ice. Fig. 2 represents the right lip of Yosemite, situated on the upper Merced below the confluence of Cathedral tributary. The whole lip is polished and striated. The arrows indicate the direction of the *striæ*, which measure the angle of ascent made by the outflowing ice.

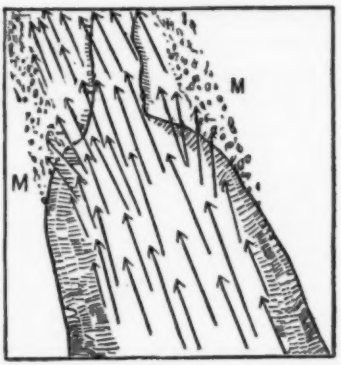


FIG. 1.

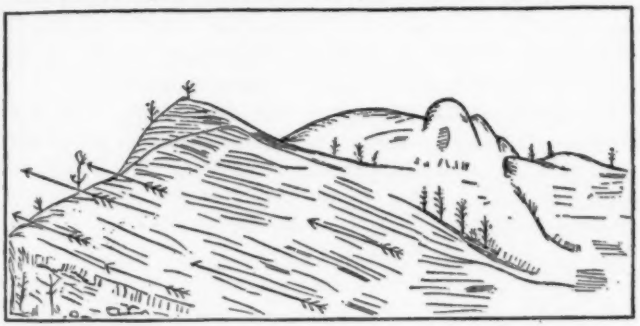


FIG. 2.

In the presentation of these studies, we have proceeded thus far with the assumption that all the valleys of the region are valleys of erosion, and that glaciers were the principal eroding agents; because the intelligible discussion of these propositions requires some knowledge of the physiognomy and general configuration of the region, as well as of the history of its ancient glaciers. Our space is here available only for very brief outlines of a portion of the argument, which will be gradually developed in subsequent articles.

That fossils were created as they occur in the rocks, is an ancient doctrine, now so little believed that geologists are spared the pains of proving that nature ever deals in fragmentary creations of any sort. All of our valleys are clearly fragmentary in some degree. Fig. 3 is a section across Yosemite Valley from

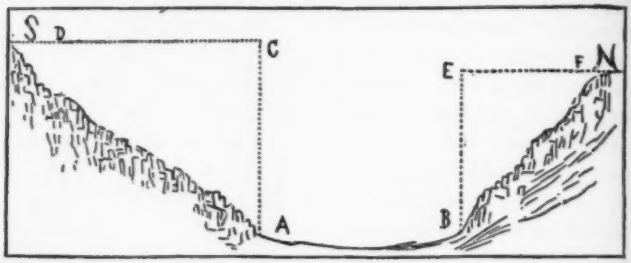


FIG. 3

Indian Cañon, which displays the stumps of slabs and columns of which the granite is here composed. Now, the complements of these broken rocks must have occupied all, or part, or more than all of the two portions of the valley, A C D and B E F. The bottom, A B, is covered with drift, but we may assume that if it were laid bare we would find it made up of the ends of slabs and columns like the sides, which filled the space A C E B; because in all valleys where the bottom is naked, the broken stumps *do* appear, showing that this valley was not formed by a fold in the mountain surface, or by a splitting asunder, or by

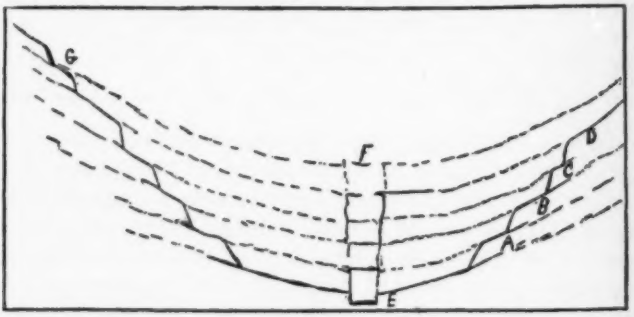


FIG. 4.

subsidence, but by a breaking up and translation of rocks which occupied its place; or, in other words, by erosion.

Fig. 4 is a section across the lower portion of the valley of Illilouette south of Mount Starr King. In this case the bottom is naked, and the dotted reconstructed portions of the huge granite folds A B C D have evidently been eroded.* Even the smoothly curved trough of two rock-waves which afford sections like Fig. 5 can not be regarded as a valley originating in a

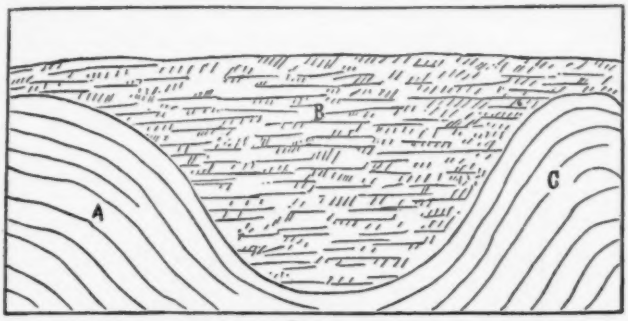


FIG. 5.

fold of the surface, for we have shown in the first paper of this series that domes or extended waves, with a concentric structure like A C, may exist as concretionary or crystalline masses beneath the surface of granite possessing an entirely different structure or no determinate structure whatever, as in B.

The chief valley-eroding agents are water and ice. Each has been vaguely considered the more influential by different observers, although the phenomena to which they give rise are immensely different. These workmen are known by their chips, and only glacier chips form moraines which correspond in kind and quantity to the size of the valleys and condition of their surfaces. Also their structure unfolds the secret of their origin. The constant and inseparable relations of trend, size, and form which these Sierra valleys sustain to the ice-fountains in which they all head, as well as their grooved and broken sides, proclaim the eroding force to be ice. We have shown in the second paper† that the trend of Yosemite valleys is always a direct resultant of the forces of their ancient glaciers, modified

* Water never erodes a wide U-shaped valley in granite, but always a narrow gorge like *E F*, in Fig. 4.

† Reprinted in SIERRA CLUB BULLETIN, Vol. X, No. 1, January 1916.

by obvious peculiarities of physical structure of their rocks. The same is true of all valleys in this region. We give one example, the upper Tuolumne Valley, which is about eight miles long, and from 2000 to 3000 feet deep, and trends in a generally northerly direction. If we go to its head on the base of Mount Lyell, and follow it down, we find that after trending steadily about two miles it makes a bend of a few degrees to the *left* (A, Fig. 6). Looking for the cause, we perceive a depression on the

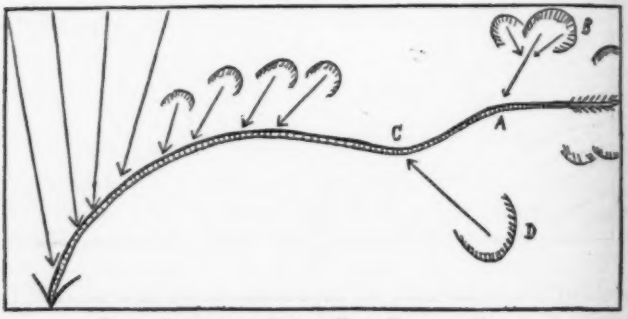
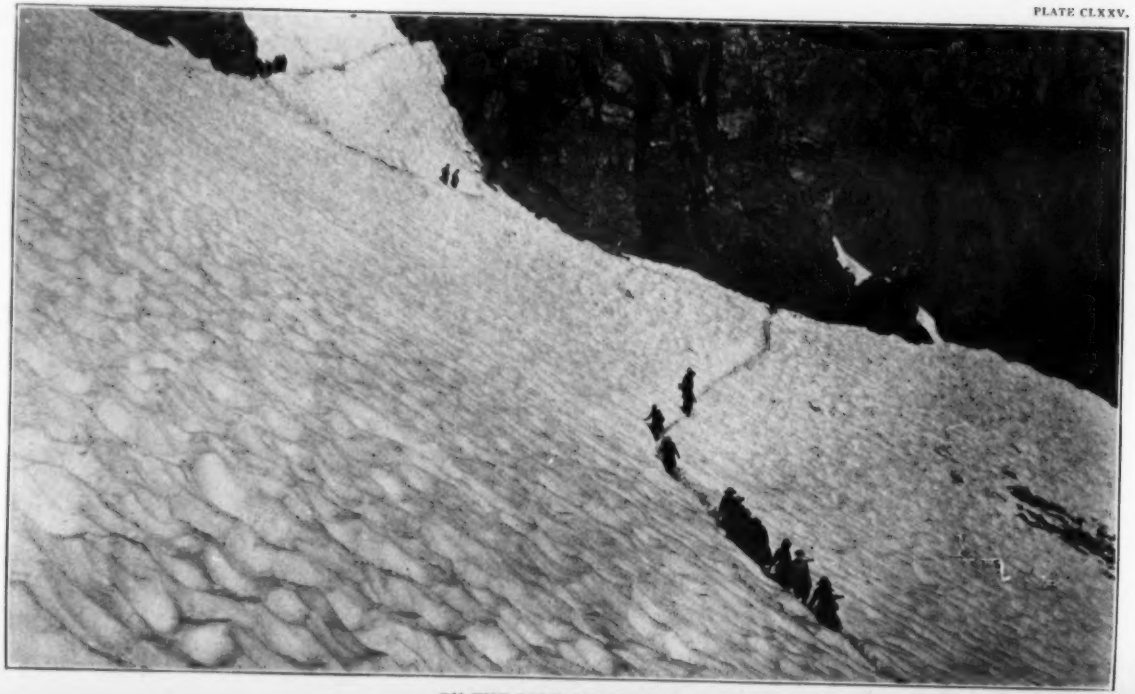


FIG. 6.—ILLUSTRATING BEND OF UPPER TUOLUMNE VALLEY

opposite or right wall; ascending to it, we find the depression to be the mouth of a tributary valley which leads to a crater-shaped ice-fountain (B) which gave rise to the tributary glacier that, in thrusting itself into the valley trunk, caused the bend we are studying. After maintaining the new trend thus acquired for a distance of about a mile and a half, the huge valley swerves lithely to the *right* at C. Looking for the cause, we find another tributary ice-grooved valley coming in on the *left*, which like the first conducts back to an ice-womb (D) which gave birth to a glacier that in uniting with the trunk pushed it aside as far as its force, modified by the direction, smoothness, and declivity of its channel, enabled it to do. Below this, the noble valley is again pushed round in a curve to the *left* by a series of small tributaries which, of course, enter on the *right*, and with each change in trend there is always a corresponding change in width or depth, or in both. *No valley changes its direction without becoming larger.* On nearing the Big Meadows it is swept entirely round to the west by huge glaciers, rep-

UP BIG ARROYO, FROM RIM ABOVE MORAINE LAKE
Photo by Everett Shepardson



ON THE JOHN MUIR TRAIL
Descending snow-field at head of Shepard Cañon
Photo by Walter L. Huber

resented by the large arrows, which descended from the flanks of Mounts Dana, Gibbs, Ord, and others to the south. For thirty miles farther, we find everywhere displayed the same delicate yielding to glacial law, showing that, throughout the whole period of its formation, the huge granite valley was lithe as a serpent, and winced tenderly to the touch of every tributary. So simple and sublime is the dynamics of the ancient glaciers.

Every valley in the region gives understandable evidence of having been equally obedient and sensitive to glacial force, and to no other. The erosive energy of ice is almost universally underrated, because we know so little about it. Water is our constant companion, but we cannot dwell with ice. Water is far more human than ice, and also far more outspoken. If glaciers, like roaring torrents, were endowed with voices commensurate with their strength, we would be slow to question any ascription of power that has yet been bestowed upon them. With reference to size, we have seen that the greater the ice-fountains the greater the resulting valleys; but no such direct and simple proportion exists between areas drained by water streams and the valleys in which they flow. Thus, the basin of Tenaya is *not one-fourth the size* of the South Lyell, although *its cañon is much larger*. Indeed, many cañons have no streams at all, whose topographical circumstances are also such as demonstrate the impossibility of their ever having had any. This state of things could not exist if the water streams which succeeded the glaciers could follow in their tracks, but the mode and extent of the compliance which glaciers yield to the topography of a mountainside, is very different from that yielded by water streams; both follow the lines of greatest declivity, but the former in a far more general way. Thus, the greater portion of the ice-current which eroded Tenaya Cañon flowed over the divide from the Tuolumne region, *making an ascent of over 500 feet*. Water streams, of course, could not follow; hence the dry channels, and the disparity, to which we have called attention, between Tenaya Cañon and its basin.

Anyone who has attentively observed the habits and gestures of the upper Sierra streams, could not fail to perceive that they are young, and but little acquainted with the mountains; rushing wildly down steep inclines, whirling in pools, sleeping in

ON THE JOHN MUIR TRAIL.
Descending snow-field at head of Illilouette Cañon

lakes, often halting with an embarrassed air and turning back, groping their way as best they can, moving most lightly just where the glaciers bore down most heavily. With glaciers as a key the secrets of every valley are unlocked. Streams of ice explain all the phenomena; streams of water do not explain any; neither do subsidences, fissures, or pressure plications.

We have shown in the previous paper that *post-glacial streams have not eroded the 500,000th part of the upper Merced cañons.* The deepest water gorges with which we are acquainted are between the upper and lower Yosemite falls, and in the Tenaya Cañon about four miles above Mirror Lake. These are from twenty to a hundred feet deep, and are easily distinguished from ice-eroded gorges by their narrowness and the ruggedness of their washed and pot-holed sides.

The gorge of Niagara River, below the falls, is perhaps the grandest known example of a valley eroded by water in compact rock; yet, comparing equal lengths, the glacier-eroded valley of Yosemite is a hundred times as large, reckoning the average width of the former 900 feet, and depth 200. But the erosion of Yosemite Valley, besides being a hundred times greater, was accomplished in hard granite, while the Niagara was in shales and limestones. Moreover, Niagara cañon, as it now exists, expresses nearly the whole amount of erosion effected by the river; but the present Yosemite is by no means an adequate expression of the whole quantity of glacial erosion effected there since the beginning of the glacial epoch, or even from that point in the period when its principal features began to be developed, because the walls were being cut down on the top simultaneously with the deepening of its bottom. We may fairly ascribe the formation of the Niagara gorge to its river, because we find it at the upper end engaged in the work of its further extension toward Lake Erie; and for the same reason we may regard glaciers as the workmen that excavated Yosemite, for at the heads of some of its branches we find small glaciers engaged in the same kind of excavation. Merced cañons may be compared to mortises in the ends of which we still find the chisels that cut them, though now rusted and worn out. If Niagara River should vanish, or be represented only by a small brook, the evidence of the erosion of its gorge would still re-

main in a thousand water-worn monuments upon its walls. Nor, since Yosemite glaciers have been burned off by the sun, is the proof less conclusive that in their greater extension they excavated Yosemite, for, both in shape and sculpture, *every Yosemite rock is a glacial monument.*

When we walk the pathways of Yosemite glaciers and contemplate their separate works—the mountains they have shaped, the cañons they have furrowed, the rocks they have worn, and broken, and scattered in moraines—on reaching Yosemite, instead of being overwhelmed as at first with its uncompared magnitude, we ask, *Is this all?* wondering that so mighty a concentration of energy did not find yet grander expression.

INDIAN VILLAGE AND CAMP SITES IN YOSEMITE VALLEY*

By C. Hart Merriam

FOR ages before its discovery by white men Yosemite Valley was inhabited by Indians. Owing to its isolated position and the abundance of mountain trout, quail, grouse, deer, bear, and other game animals, and of acorns, manzanita-berries, and other vegetable foods, it supported a large population. This is attested not only by the statements of the Indians themselves, but also by the surprisingly large number of villages whose locations have been determined. These were of three kinds: (1) *permanent villages,* occupied the year round, though somewhat depleted in winter; (2) *summer villages,* occupied from May to October, after which the inhabitants moved down into the milder climate of Merced Cañon, where there was little or no snow; and (3) *seasonal camps* for hunting and fishing. The camps were definitely located and each was regularly occupied at a particular season.

It has not always been possible to distinguish between village-sites and camp-sites, but, taken collectively, I have been able, with the help of resident Indians, to locate and name no less than thirty-seven. All of these were in the valley proper, and at least six were occupied as late as 1898. To the list I have added sixteen located in the cañon of the Merced from the Cascades to Ferguson Station, six miles below El Portal, making in all fifty-three villages and camps in a distance of about twenty-two miles; and doubtless there were others which my informants had forgotten.

All of these people belonged to the *Ahwaneéche* or *Ahwah'nee Mew'-wah,* a subtribe closely akin to the neighboring *Chowchil'-la Mew'-wah* of Chowchilla Cañon. Their language is the

*This article was written in 1910, during which year I was able to complete the list of villages from the head of Yosemite Valley to Ferguson Station on the Merced, about six miles below El Portal. I had previously obtained and published the villages from Horseshoe Bend down the Merced as far as the territory of the tribe extended, and was anxious to fill the gap between *Soo-noó-koo-loon* at Ferguson and *Se-saw'-che* at Horseshoe Bend. Not having been able to do this, it seems hardly worth while to defer publication longer.

southernmost of the three dialects of the once great *Mé-wuk* family—a family comprising a group of closely related tribes occupying the western foothills and lower slopes of the Sierra Nevada from Cosumnes River south to Fresno Creek.

ORIGIN OF THE NAME YOSEMITE

In this connection it is interesting to recall how the name Yosemite originated. In the early spring of 1851 the valley was invaded by an Indian-chasing expedition. The word Yosemite, said to be the name of the native Indian tribe, was proposed by Dr. L. H. Bunnell, a member of the expedition, and accepted by the others while still in the valley.* During the early fifties there was some controversy between Bunnell and Hutchings as to whether the proper form was *Yo-sem'-i-te* or *Yo-ham'-i-te* (or *Yo-hem'-i-te*). Hutchings was right, *Yo-ham'-i-te* being the name of the band inhabiting a large and important village on the south bank of Merced River at the place now occupied by Sentinel Hotel and its cottages. These Indians hunted the grizzly bear, whose name—*Oo-hoó-ma-te* or *O-ham'-i-te*—gave origin to their own. The tribe next north of the valley called the grizzly *Oo-soó-ma-te,* which doubtless accounts for the euphonious form given by Bunnell and now universally accepted.

PECULIAR CLASSIFICATION OF THE VILLAGES

The villages and camps were sharply divided into two categories—those *north* of Merced River and those *south* of it. This division has a far deeper and more ancient significance than that indicated by the mere position of the villages with respect to the river, for it goes back to the underlying totemic beliefs that form an important part of the religion of this primitive people.

If one of the survivors is questioned as to the location of the villages, he in replying constantly makes use of the terms *inside* and *outside* as denoting one or the other side of the valley; and if the inquiry is pressed a little farther it soon develops that there is a *grizzly-bear side* and a *coyote side,* a *land side (Too-noó-kah),* and a *water side (Kik-koó-ah).* This perplexing state of affairs leads to the interesting discovery that

*L. H. Bunnell, "How the Yo-Semite Valley was Discovered and Named." *Hutchings California Magazine,* pp. 498-504, San Francisco, May, 1859.

after all there are only two sides, but that each of them has four names: that the north side, inside, grizzly-bear side, and land side are one and the same—namely, the side *north* of Merced River; while the south side, outside, coyote side, and water side are only so many different names for the side *south* of Merced River.

The names most commonly used by the Indians themselves for the two sides are *Oo-hoó-mă-tăt ko-tó-wahk* (or *Oo-hoó-mă-te ha-wă'-ah),* the grizzly-bear side, and *Ah-hă'-leet ko-tó-wahk* (or *Ah-hă'-le ha-wă'-ah),* the coyote side—from *Oo-hoó-ma-te,* the bear, and *Ah-hă'-le,* the coyote, respectively.

It is not difficult to see how *Oo-hoó-ma-te,* the bear, an important personage among the early animal-people, might be chosen to represent the land animals; but why *Ah-há-le,* the coyote, should stand for the water-people is not so obvious. For the explanation one must look far back into the mythology of these Indians, in which it appears that before there were any real people in the world *Ah-há-le,* the coyote-man, one of the early divinities of the animal-people, came over the ocean from beyond the sea—for which reason he is ranked with the water-people.

Returning to our more immediate subject, the village and camp sites of Yosemite Valley, it is now easier to understand the grouping employed by the Indians. Indians are naturally methodical, and it is their custom to classify objects and places, and in speaking of them to begin at a fixed point and proceed in orderly sequence. Thus, in seeking the names of animals and plants and of geographic locations, I have several times provoked the undisguised disgust of my informant by not putting my questions in what he or she deemed the proper sequence.

In enumerating the village and camp sites of Yosemite Valley the Indians begin at the upper (or east) end of the north side—the grizzly-bear side—and proceed westerly to *Til-til'-ken-ny* at the lower end of the valley, and then cross the Merced to the south side—the coyote side—and return easterly to the upper end.

Following this sequence, the names and locations of the villages and camps are as follows:

ON THE NORTH (OR GRIZZLY-BEAR) SIDE—OO-HOÓ-MA-TAT KO-TÓ-WAHK

1. *Hoo-ké-hahtch'-ke.*—Situated at the extreme upper end of the valley between Merced River and Tenaya Creek, and just below the mouth of Tenaya Cañon. A summer village inhabited up to about twenty years ago.

2. *Hol'-low'*, or *Lah'-koó-hah.*—Indian cave, immediately under Washington Column at the mouth of Tenaya Cañon; a low, broad, and deep recess under a huge rock. Said to have been occupied as a winter shelter, and also when attacked by the Mono Lake Piutes. The overhanging rock is black from the smoke of ages, and far back in the cave large quantities of acorn-shells have been found. The word *Lah-koó-hah*, often applied to Indian Cave, is a call meaning "come out."

3. *Wis'-kah-lah.*—A large summer camp on a northward bend of Merced River, a little west of Royal Arches. Western part of site now occupied by a small settlement known as Kinneyville.

4. *Yó-watch-ke* (sometimes nicknamed *Mah-chá-to*, meaning "edge" or "border," because of its position on the border of the valley).—Large village at mouth of Indian Cañon; still occupied. The slightly sloping gravel and sand "fan" on which this village is situated is the warmest place in Yosemite Valley, having a southwesterly exposure and receiving a maximum of midday and afternoon sunshine. Several species of shrubs belonging to the Upper Sonoran zone—the one next below the Transition zone, in which Yosemite Valley lies—thrive on this hot sandy plain among and outside of the scattered ponderosa pines and black oaks. These are *Ceanothus divaricatus, Rhus trilobata, Lupinus ornatus, Eriodictyon glutinosum, Pentstemon breviflorus.*

5. *Ah-wah'-ne.*—Village on Black Oak Flat, extending from site of Galen Clark's grave easterly nearly to *Yó-watch-ke.* As in the case of most of the villages, the village name was applied also to a definite tract of land belonging to it. This area, in the case of *Ah-wah'-ne*, was a piece of level ground of considerable size, beginning on the west along a north and south line passing through Sentinel Hotel and reaching easterly nearly to the mouth of Indian Cañon. The cemetery was on this tract, as was also the barn formerly belonging to J. B. Cooke. This being the largest tract of open level ground in the valley, the name *Ah-wah'-ne* came to be applied by outside Indians to the whole valley.

6. *Koom-i-ne*, or *Kom-i-ne.*—The largest and most important village in the valley, situated on the north side of the delta of Yosemite Creek just below Yosemite Fall *(Ah-wah'-ning chú-luk-ah-hu*, slurred to *Chó-luk)*, and extending southwesterly at the base of the talus-slope under the towering cliffs for about three-quarters of a mile, reaching almost or quite to Three Brothers *(Haw'-hawk)*. Old Chief Tenaya had a large earth-covered ceremonial-house *(hang-e)* by a big oak tree in this village. The Government soldiers stationed in the valley took possession

of the site and established their camp there in 1907, forcing the Indians out. (Occupied by Indians during all my earlier visits.)

7. *Wah-hó-gah.*—Small village about half a mile west-southwest of *Koom-i-ne*, on or near edge of meadow.

8. *Soo-sem'-moo-lah.*—Village at northwest end of old Folsom bridge (now the ford), less than half a mile south of Rocky Point.

9. *Hah-ki-ah.*—Large village only a short distance (less than one-eighth mile) below *Soo-sem'-moo-lah*, and likewise south of Three Brothers *(Haw'-hawk)*. A roundhouse, or *hang-e*, was located here, not far from old Folsom bridge. The three villages, *Wah-hó-gah, Soo-sem'-oo-lah*, and *Hah-ki-ah*, were inhabited up to about twenty years ago.

10. *Kom'-pom-pá-sah*, or *Pom'-pom-pá-sah.*—Small village only a little below *Hah-ki-ah*, and also south of Three Brothers, or under the talus slope of the cañon immediately west of Three Brothers.

11. *Aw'-o-koi-e.*—Small village below and slightly east of the tall pine growing in a notch on the broad south face of El Capitan. The native Indian name of the gigantic rock cliff which we call El Capitan is *To-tó-kon oo-lah*, from *To-tó-kon*, the Sandhill Crane, a chief of the First People.

12. *He-lé-jah* (the mountain lion).—Small village under El Capitan a little west of *Aw'-o-koi-e.*

13. *Ha-eng'-ah.*—Small village under El Capitan, and only a little west of *He-lé-jah.*

14. *Yu-á-chah.*—Still another village under El Capitan, and only a short distance west of *Ha-eng'-ah.*

15. *Hep-hep'-oo-ma.*—Village where present Big Oak Flat road forks to leave the main road, south of the steep cañon which forms the west wall of El Capitan, and near west end of the big El Capitan Meadows *(To-tó-kon oó-lah' i-e-hu)*. The five villages, *Aw'-o-koi-e, He-lé-jah, Ha-eng'-ah, Yu-á-chah*, and *Hep-hep'-oo-ma*, were summer villages occupied from April to late October or early November.

16. *Ti-e-té-mah.*—Village only a short distance below *Hep-hep'-oo-ma*, and close to El Capitan bridge.

17. *Ho-kó-nah.*—Small village a little below *Ti-e-té-mah*, and near site of old (shack) house.

18. *Wé-tum-taw.*—Village by a small meadow a short distance below *Ho-kó-nah*, and east of Black Spring.

19. *Poot-poo-toon*, or *Put-put-toon.*—Village in rocky place on north side of present road at Black Spring, from which it takes its name.

20. *Ah-wah'-mah.*—Lowermost (westernmost) village in Yosemite Valley, a short distance below Black Spring and above *Til-til'-ken-ny*, where the mail-carrier's cabin is located.

MOUNT BREWER
Photo by Dozier Finley

PLATE CLXXVII.

THE KINGS-KERN DIVIDE AND KEARSARGE PINNACLES FROM MOUNT GOULD
Photo by Walter L. Huber

VILLAGES ON THE SOUTH OR COYOTE SIDE—AH-HÁ-LEET KO-TÓ-WAHK

21. *Sap-pah'-sam-mah.*—Lowermost (most westerly) village or camp on south side of the valley, about half a mile east of Pohono Meadows.

22. *Lem-mé-hitch'-ke.*—Small village or camp on east side of Pohono (or Bridal Veil) Creek, just below a very large rock.

23. *Hop'-tó-ne.*—Small village or camp at base of westernmost of the lofty cliffs known as Cathedral Rocks, and close to south end of El Capitan bridge across Merced River.

24. *Wé-sum-meh'.*—Small village or camp at base of Cathedral Spires near the river, with a small meadow below; not far above *Hop'-tó-ne.*

25. *Kis'-se,* or *Kis'-se-uh.*—Large village near the river, nearly opposite *Hah-ki-ah. Kis'-se* was the westernmost of the large villages on the south side. From it easterly they occurred at frequent intervals.

26. *Chá-chá-kal-lah.*—Large village just below old Folsom bridge (ford). Formerly a sweat-house *(chap-poó)* here.

27. *Ham'-moo-ah.*—Village on Ford road, nearly opposite Three Brothers *(Wah-hah'-kah).*

28. *Loi-ah.*—Large village in open pine forest below Sentinel Rock (on ground now occupied by Camp Ahwahnee) and reaching down toward river. Occupied during my earlier visits to the valley.

29. *Hoó-koo-mé-ko-tah.*—Village a little above Galen Clark's house; looked out easterly over big meadow. Occupied during my earlier visits. *(Hoo-koo-me* is the great horned owl.)

30. *Haw-kaw-koó-e-tah (Ho-kok'-kwe-lah, Haw-kaw'-koi*).*—Large and important village on Merced River, where Sentinel Hotel and cottages now stand. Home of the band called *Yo-ham'-i-te* (or *Yo-hem'-i-te),* for whom the valley was named. The old woman Callipena was a *Yo-ham'-i-te.*

31. *Ho-low.*—Village on or near Merced River where the schoolhouse used to stand.

32. *Wah'-tahk'-itch-ke.*—Village on edge of meadow on south bend of Merced River near forks of road west of Le Conte Memorial. The wild pea *(wah-tah'-kah)* grows here.

33. *Too-yú-yú-yu.*—Large village on south bend of Merced River due north of Le Conte Memorial and close to the bridge between Le Conte Memorial (or Camp Curry) and Kinneyville.

34. *Too-lah'-kah'-mah.*—Village or camp on open ground now occupied by orchard on east side of meadow north of Camp Curry.

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* Named from *How-kaw'-met-te,* or *How-wah-met-te,* a rocky place.

THE KINGS-KERN DIVIDE AND KEARSARGE PINNACLES FROM MOUNT GOULD
Photo by Walter L. Huber

35. *Um'-ma-taw.*—Large village on present wagon-road between Camp Curry and Happy Isles; was some distance from the river; water was fetched from a spring.

36. *Ap'-poo-meh.*—Camp on Merced River below Vernal Fall.

37.—*Kah-win'-na-bah'.*—Large summer camp in Little Yosemite, whose name it bears.

VILLAGES IN MERCED CAÑON BELOW YOSEMITE VALLEY

There were no villages in the narrow Merced Cañon between the lower end of Yosemite Valley and the Cascades, where there were a few houses called *Yi-yan'*. This name also covered the ground from Cascade Creek to the junction of the Coulterville road.

The next village on the north side was at the terminus of the new railroad at El Portal (a distance of eight or nine miles), where the villages began and continued down-stream. Most of these were permanent, but they were far larger in winter than in summer, receiving material additions from Yosemite when cold weather set in.

Sit'-ke-noó-al-lah.—Place and few houses on the south side of Merced River a little above (east of) El Portal; now Indian Wilson's place.

Kep-pek'-oo-lah.—Place and small settlement on the south side of Merced River just above El Portal; now occupied by a white man. Named from the abundance of *kep-pek'*, the brake fern *(Pteris aquilina)*, the rootstocks of which the Indians use for the black design in their baskets.

Kah-wah'-koo-lah.—Place and small settlement on the south side of Merced River half a mile below *Sit'-ke-noó-al-lah* and nearly opposite El Portal stable.

Sal-lah'-to.—Large village on flat now occupied by the railroad terminus at El Portal. The place at the mouth of Crane Creek at El Portal is called *Sas'-oo-lah;* formerly a few houses where the hotel stable now is.

Po-ko-nó.—Village on the north side of the Merced a quarter of a mile west of El Portal. The flat gravel and pebble bench extending along the north side of the Merced for an eighth of a mile just below El Portal was known by the same name.

Choó-pi-tah, or *Choó-pi-do.*—Large village on the north side of Merced Cañon one or one and a half miles below El Portal, at the place called Rancheria Flat (immediately west of the present Hite Mine and northeast of the bend of the river).

To-yo'ng-am'.—Small village on top of a small pointed hill on the north side of the Merced at the bend of the river just below Hite Mine (really surrounded by *Choó-pi-tah,* being situated in the middle of the flat; may have been only a roundhouse).

Soó-wut-oo-lah'.—Large and important village on large oak-forested flat on the north side of the Merced, now Switch Flat (railroad switch), just west of Hogback Ridge, which separates it from *Choó-pi-tah.* Used to be a roundhouse *(hang-e)* here.

Oi-kó-bah.—Very small old village at mouth of Moss Cañon, north side of the Merced; not room for many houses.

Kil'-mit-ten.—Big village on flat on the north side of the Merced just above the Government bridge.

Moó-lah-buk'-sa-bah'.—Village on the north side of the Merced just below and close to the Government bridge.

Haw'-too-too.—Village on the north side of the Merced. Old cabin there now, opposite the present Indian ranch where Big Nancy and others live.

Muh-chó-kah-nó.—Old village on the south side of the Merced, at present occupied by Big Nancy, Callipena, and Lucy Ann.

Wah'ng'-oo-hah.—Village on small flat on the north side of Merced Cañon, a little above the mill at Ferguson Mine.

Soo-noó-koo-loon'.—Village on the north side of Merced Cañon, at present Ferguson Station, six miles below El Portal.

SIERRA CLUB

Founded 1892

402 Mills Building, San Francisco, California

Annual Dues: $3.00, (first year $5.00)

THE PURPOSES OF THE CLUB ARE:

To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada.

John Muir, President 1892 to 1914

OFFICERS AND COMMITTEES FOR THE YEAR 1916-17

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Committee on Le Conte and Parsons Memorial Lodges: Marion Randall Parsons *(Chairman)*, Robert M. Price, Joseph N. Le Conte.

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Librarian: Nell R. Taggard.

Southern California Section Executive Committee: Charles J. Fox *(Chairman)*, Phil S. Bernays *(Secretary*, 318 West Third Street, Los Angeles), Benjamin W. Fenton *(Treasurer)*, H. E. Bailey, Mrs. Henry Braun, Ernest Dawson, Homer P. Earle, George A. White.

SIERRA CLUB BULLETIN

Published annually for the members

EDITORIAL BOARD

William F. Badè ..... *Editor*
William E. Colby ..... *Notes and Correspondence*
Marion Randall Parsons ..... *Book Reviews*
Walter L. Huber ..... *Forestry Notes*
Albert H. Allen, Francis P. Farquhar,
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Elliott McAllister

EDITORIALS

A QUARTER OF A CENTURY OF SERVICE

The year 1917 marks a quarter of a century in the life of the Sierra Club. It is natural that we should pause at this time and look back over these twenty-five years of existence to determine whether or not the organizers of the club were justified in creating it. The club's record during these years is ample justification for their faith. It has filled a need and accomplished a purpose which places the reason for its existence beyond all possible question. Growing appreciation of the incomparable natural scenery on this coast and the necessity for its preservation and safeguarding created a demand for some public-spirited body which would unselfishly and fearlessly stand in the breach until such time as the public conscience should be awakened to its real value.

The club's stand in resisting encroachments on the national parks; in favoring the creation of the early forest reservations; in reducing to reasonable numbers the cattle and sheep which at one time overran the entire Sierra, and in excluding them entirely from certain scenic areas of exceptional interest; in the recession of the Yosemite Valley to the Federal Government; in advocating the great principle that national parks should be inviolate, which was involved in the attempt to save the Hetch-Hetchy Valley; in favoring the creation of additional national parks, and its stand on other similar questions, have been in the face of powerful opposition and bitter criticism, and while it has not met with success in every instance, it has compelled the respect of its opponents, who have eventually been forced to admit that the fight was made in each instance in absolute good faith and with the honest conviction that the object sought to be accomplished was for the greatest public good.

As an advocate of the gospel of "out-of-doors" and in fostering the spirit of the true mountaineer, the club has also added much to its prestige.

The club's prime object is service; its activities in taking its members into the mountains each summer, and in the publication of information, have all been for the purpose of awakening an intelligent interest in the greater work it is striving to accomplish.

The future gives promise of equally great opportunity for continued service. While we have been deprived of the temporal leadership of that noble mountain-lover who presided over the destinies of the club for the greater part of its twenty-five years of existence—our beloved John Muir—we still have the inspiration of his message, and his words live with us as if spoken anew each day. As we journey to the mountains year after year, his spirit is there to give us renewed courage to meet the problems and carry on the great work that has fallen to our lot. We may well accept as our standard the supreme faith he expressed in these

words: "We may lose this particular fight, but truth and right must prevail at last. Anyhow we must be true to ourselves and the Lord."

W. E. C.

* * *

NATIONAL PARK PROGRESS

In another portion of the BULLETIN we have given a synopsis of the Progress Report made by Hon. Stephen T. Mather, Assistant to the Secretary of the Interior, who has charge of the national parks, and also extracts from the annual report of Mr. Robert B. Marshall, Superintendent of National Parks. These reports speak for themselves and indicate that the splendid work inaugurated by Mr. Mather has been carried on with increasing results during the past year. The creation of a national park service which places the parks on a firm foundation for the first time in their history, greater efficiency in administration, increased appropriations, as well as the broad-gauge way in which all the park problems are being handled, give every evidence of the wise foresight which has been displayed by this new park administration. The development of the parks is in a measure wasted energy unless a proper interest is awakened in the American public, and this can only be done through the medium of appropriate literature and press notices. Mr. Mather has fully recognized this fact, and more articles and illustrations of the parks have appeared in the newspapers and other publications during the past year than ever before. Already the increase in travel is especially noticeable, taking the Yosemite National Park as an example. The fact that the visitors during the year 1916 equaled, and even slightly exceeded, the extraordinary travel of 1915, which could be largely attributed to the Exposition in San Francisco, is most encouraging. Mr. Mather is entirely correct in attributing a large portion of the increase in travel to the fact that the parks are being opened up to motor travel, and he is doubtless justified in assuming that this travel will soon equal and finally far exceed travel from any other source. His endeavor to improve existing roads and build new roads will meet this growing demand. We note, however, with regret the attempt on the part of some of the leaders in motor travel to have the present automobile fee abolished. By advocating this they are defeating their own ends. Those of us who have had experience in the endeavor to secure appropriations from Congress for park purposes realize the impossibility of obtaining appropriations adequate to meet all the growing needs of these parks. Certain improvements demand considerable expenditures, and it is only fair that, for the present at least, the motorists who make use of these expensive highways through the parks should, by paying the comparatively small fee imposed, aid in the building and upkeep of these roads over which they travel and which exist almost exclusively for their use.

We note with profound satisfaction the steps which are being taken to create an adequate force of trained park rangers. These rangers will necessarily have to possess qualifications similar in many respects to the

national forest rangers, and the Government should see that the positions offer sufficient inducement to justify qualified men in making it their life-work. There is a splendid field opening here for young men who desire to devote themselves to attractive out-of-door life.

The American public owes Mr. Mather, with the able assistance of Mr. Marshall, a great debt of gratitude in bringing about the purchase of some of the finest stands of sequoia in the Giant Forest, which is a part of the Sequoia National Park. The preservation of these big trees was the prime motive in the creation of this park, and it was a public misfortune that some of the finest of these forest giants should have been held in private ownership. Congress appropriated $50,000, and the National Geographic Society gave evidence of its splendid public spirit by appropriating the balance of $20,000 out of its own treasury, and thus completing the amount necessary to buy the more important of these private holdings which have recently been transferred to the Federal Government.

In telling of all these accomplishments it is only fair to give credit also to Mr. Horace M. Albright, who, while he has been working in a less prominent capacity as Mr. Mather's secretary, has yet contributed a large share toward these successful results.

It is highly probable that the appropriation of over $300,000 asked for Yosemite improvements for the coming year will be granted by Congress, but there is little hope of securing the enlargement of the Sequoia National Park or the creation of the Grand Cañon National Park during this short session of Congress. W. E. C.

* * *

WELCOME NEWS CONCERNING OUR EDITOR-IN-CHIEF

It is with profound pleasure that we announce the recent marriage of our worthy Editor-in-Chief, Dr. William F. Badè, to Elizabeth Marston, of San Diego. Both of these delightful people are so well known to most of the members of our club that they will join with us in rejoicing over this happy event.

This is Dr. Badè's sabbatical year, and he and his bride will not return to Berkeley until the latter part of the summer.

Dr. Badè wishes that full credit be given to the remaining members of the Editorial Board for the publication of the BULLETIN during his absence. W. E. C.

* * *

JOHN MUIR TRAIL

Anyone who has traveled over the completed portions of the John Muir Trail can not fail to recognize the importance of this work in developing and making accessible the high Sierra, and also to become convinced that there could not be a more appropriate memorial to the life and work of John Muir. The club has prepared and presented to the present California legislature a bill appropriating $30,000 for the purpose of completing this trail and building and

improving important lateral trails leading into it. The importance of the work which has been illustrated by the trail already built justifies asking for this amount, and if each member of the club will urge the legislators to appropriate this amount it will be done without question. We must express our great appreciation of the assistance which has been rendered by Mr. W. F. McClure, State Engineer, who has control of this fund, and also the able assistance of the officials of the Forest Service who have carried on the actual construction work. W. E. C.

* * *

EASTERN PARKS VS. WESTERN

In spite of all that has been written about the national parks, it was rather amusingly evident at the recent National Parks Conference in Washington that one question is not yet clear to the general public in the eastern states—wl.y the west should be so disproportionately favored. One speaker even urged that the parks in the future be established nearer the centers of civilization, having never heard, apparently, of Mahomet's historic dilemma. More than one speaker, indeed, showed that a clearer definition is needed between a recreational park like the Interstate Palisades Park (an open space established primarily for health and recreational purposes for a particular center of population, where scenic attractions are the secondary consideration) and a national park, whose situation is wholly determined by its unusual natural beauty. The former is of interest only to an individual city or state, the latter to the nation and world at large. In the present stage of national park development only hopeless confusion could arise out of any attempt to place parks of such local interest under national control. M. R. P.

ON THE JOHN MUIR TRAIL
Mounts Williamson, Barnard, and Tyndall, from summit of Junction Pass
Photo by Marion Randall Parsons

ON THE JOHN MUIR TRAIL
Suspension Bridge over French Cañon Creek—Constructed 1915
Photo by Mrs. Cleaveland Forbes

ON THE JOHN MUIR TRAIL
Suspension Bridge over French Cañon Creek—Constructed 1915
Photo by Mrs. Cleaveland Forbes

REPORTS OF COMMITTEES

Report on Le Conte Memorial Lodge

The lodge was officially opened on the evening of May 15 by a program which consisted of music, recitations, and an address by Mr. Foote, of Los Angeles, who told of some experiences with General Villa in Mexico. About two hundred crowded into the lodge. The lodge was open until the first of October, four months and a half. For one month and a half after the expiration of the regular custodian's work the lodge was in charge of Mr. W. A. Bourne, a new member of the club.

The number of the people visiting the valley this year far exceeded that of any previous year. The registration therefore was very large. From May 15 to August 15 the registration was 4069; during Mr. Bourne's stay 514 were added. The total registration was 4583.

Several times during the summer groups of people gathered in the lodge and the custodian gave short addresses upon "Joseph Le Conte," "John Muir," and "The Work of the Sierra Club." Very great interest in the work of the club was constantly shown. Notices concerning the lodge were posted in all the camps. Mr. Curry frequently told his guests of the lodge; he also furnished, without charge, all the wood that was needed.

For the first time this summer books were loaned for use outside of the building. Several shelves were reserved and all others were loaned, a deposit being taken to cover the cost of the book. Not a single book was lost, and a great many visitors expressed their appreciation of this kindness through the club's treasury and by the gifts of friends.

There is great need for a new herbarium. Many visitors expressed disappointment that the collection of birds there last year had been removed. The photograph albums are worn out and must be replaced. Albums of the Tuolumne country and the Kings and Kern river cañons are especially desirable. Also a larger sign with more detailed information about the lodge should be placed down by the main road. Novels, and especially books of nature, that friends of the club wish to give to the library will always be greatly appreciated and widely used. There should be two good strong writing-tables placed in the lodge by next summer.

The sale of maps amounted to $5.50; the sale of Bulletins amounted to $8.00; gift received from Mrs. Adams, Salt Lake City, $1.00. Total, $14.50.

Fred W. Morrison, *Custodian*

J. N. Le Conte, *Chairman,*
R. M. Price,
Marion Randall Parsons,
Committee

RESULT OF ELECTION IN SOUTHERN CALIFORNIA SECTION

Executive Committee

(To serve two years commencing November 15, 1916)

Mr. Chas. J. Fox, Los Angeles.....Chairman
Mr. Phil. S. Bernays, Los Angeles.....Secretary
Mr. Benj. W. Fenton, Pasadena.....Treasurer

Mr. H. E. Bailey, Los Angeles
Mrs. Henry Braun, Glendale
Mr. Homer P. Earle, South Pasadena
Mr. Ernest Dawson, Los Angeles
Mr. Everett S. Shepardson, Los Angeles*
Dr. Geo. A. White, Santa Barbara

*Died December, 1916.

* * *

REPORT OF THE TREASURER FOR THE YEAR ENDED MAY 6, 1916

To the Board of Directors of the Sierra Club:

The accounts of the Sierra Club for the year ended May 6, 1916, are set forth in the following schedules, which are respectfully submitted for your approval.

MARION RANDALL PARSONS,
Treasurer

RECEIPTS AND EXPENDITURES YEAR ENDED MAY 6, 1916

Receipts

Dues from members	$4,475.00
Rent from sub-lease of room	180.00
Advertisements in BULLETIN	345.50
Sale of BULLETINS	41.46
Sale of maps and pins	43.00
Interest on bank accounts	34.33
Sundry small receipts	2.06
Total receipts	$5121.35

Expenditures

Rent of room—402 Mills Building	$ 720.00
Salary of assistant	720.00
Stationery and circulars	229.15
Postage	352.30
Telephone and telegraph	81.11
Office supplies	72.25
Library and photographs	33.10
Publishing 1916 BULLETIN	1,807.47
Delivering *Appalachia*	140.10
Le Conte Lodge	128.58

John Muir Trail	$ 249.36	
Southern California Section	250.00	
Out of Doors magazine	50.00	
Exhibit at P. P. I. E.	45.50	
Furniture and equipment	102.00	
Dues to other clubs	13.00	
Taxes	5.56	
Clerical assistance	15.45	
Sundry small expenses	25.68	
Total expenditures		$5,040.61
Excess of receipts over expenditures		$ 80.74
Cash on hand—May 1, 1915		1,955.81
Cash on hand—May 6, 1916		$2,036.55
Made up as follows:		
In office	$ 25.00	
First National Bank	1,461.53	
Savings Union Bank & Trust Co	343.19	
Security Savings Bank	206.83	
Total	$2,036.55	

Sierra Club Permanent Fund

Balance—May 1, 1915	$1,514.90	
Interest	60.02	
Balance—May 6, 1916, in Security Savings Bank		$1,574.92

Whymper Fund

Balance—May 1, 1915	$ 239.48	
Interest	9.66	
Balance—May 6, 1916, in Savings Union Bank & Trust Co		$ 249.14

* * *

REPORT OF 1916 OUTING

The standard of excellence of recent annual outings has been so high that each year the Outing Committee has been apprehensive that it would not be able to live up to its past record. However, the opinion was unanimously expressed, at the close of the 1916 outing into the Kern and Kings River regions, that the trip was the finest that the club had ever undertaken.

The party left the train at Springville and camped the first night near Smith & Wilson's summer resort in a beautiful pine forest. The next

day the party crossed the divide above the Tule and entered the Kern River watershed, camping at Lloyd Meadow. The next day the party crossed the Little Kern and camped in Trout Meadow. Little Kern Lake was reached on the day following, where two days were spent. Camp was then moved to the mouth of the Big Arroyo, and on the day following to Moraine Lake and Chagoopa Plateau. Here a stay of nearly a week was made. The opinion formed on the previous trip of the club to this region was confirmed, and this was generally conceded to be one of the finest camping spots that the club has ever had in the mountains. The shelter of the thick forest about the lake and opportunity for swimming, as well as the many trips to near-by points of interest, all added to its attractiveness. Several knapsack parties visited Lost Cañon, climbed Sawtooth, crossed into Five-Lake Basin, and camped at the head of the Big Arroyo, crossing the divide into the Kern-Kaweah, and thence rejoined the main camp at Junction Meadow on the Kern River, the main party having in the interim moved camp to the latter point. Quite a few members climbed Milestone. Almost the entire party visited Crabtree Meadows at the base of Mount Whitney (14,502 feet), and 175 made the ascent, which is the largest number that has visited the summit in a single day. This probably sets a record for a mountain of this height. Mount Tyndall and Mount Williamson were also climbed by several members of the party.

The great feature of the trip was the safe passage of the entire party, including baggage and pack animals, over the recently completed section of the John Muir Trail. Heretofore it has been necessary in order to reach the Kings River Basin from the Kern River, or *vice versa*, to travel around by way of Giant Forest or cross the Sierra and drop down into Independence, making an arduous detour of several days. The party left its camp in Tyndall Meadow at an altitude of about 11,000 feet and crossed Shepard Pass, which is on the crest of the Sierra at the divide between Shepard and Tyndall creeks. Dropping down from Shepard Pass a little over 1000 feet, the trail turns northwesterly, following up the northerly branch of Shepard Creek, and again crosses the main crest of the Sierra at an altitude of about 13,300 feet at Junction Pass, this pass being between Junction Peak and Mount Keith. The pass itself is a broad level area partaking of the nature of a plateau, and the trail follows out to the north on a divide between two branches of Center Basin, and finally descends into Center Basin itself and thence on down Bubbs Creek to Vidette Meadows, where the club camped that night. While this made a rather long day, the entire party arrived safely in camp that night after one of the most thrilling experiences of any of the outings. To take a party of this size, with all its camping equipment, over a pass that exceeds 13,000 feet in altitude, is an accomplishment the club can well be proud of. Four days were spent at Vidette Meadows while members of the party knapsacked to Rae Lake and also to Mount Brewer and vicinity. Before crossing Kearsarge Pass a camp was made for a single night at Kearsarge Lakes underneath the Kearsarge Pinnacles, and this

wonderful experience will long remain in the memory of members of the party. The next day Independence was reached, where the night was spent, and the members of the party returned to their respective destinations in Los Angeles and San Francisco by special train.

The music furnished by Signor and Madame de Grassi, Mr. Louis Newbauer, Miss Anna B. Ludlow, and Miss Mizpah Jackson, as well as that so generously contributed by many others, made the camp-fires of this outing more than ordinarily enjoyable. The club is also greatly indebted to one of its members, Mr. J. E. Eibeschutz, of Independence, who generously rendered assistance in many ways.

The outing planned for the summer of July, 1917, is one of the most ambitious that the club has ever contemplated. The plan of the trip, as previously announced in the preliminary circular, will be reversed. The party will start from Huntington Lake and travel by way of Hot Springs, Vermilion Valley, Blaney Meadows, and Evolution Basin on the South Fork of the San Joaquin, will cross Muir Pass over the recently constructed portion of the John Muir Trail, and will enter the headwaters of the Middle Fork of the Kings River. Camp will be made in this wonderful cañon in the vicinity of Grouse Valley, from which the wild and rugged Palisade country can easily be reached, and the party will then travel on down the newly constructed trail, which the club has assisted in building, to Simpson Meadows, then on to Tehipite Valley, and will return to the railroad by way of Shaver Lake. This trip will give an opportunity for visiting a magnificent region of the Sierra that has heretofore been known to but a few of the members of the club who have been pioneers. The recent trail-building has made this region sufficiently accessible so that the entire outing party will for the first time have the opportunity to enjoy its wonders this summer. Written application should be made at an early date.

WM. E. COLBY, *Chairman*,
J. N. LE CONTE,
CLAIR S. TAPPAAN,
Outing Committee

* * *

SECRETARY'S ANNUAL REPORT
MAY 1, 1915, TO MAY 6, 1916

To the Members of the Sierra Club:

The splendid progress made in national park affairs during the past year was continued under the able direction of Mr. Stephen T. Mather and the Superintendent of National Parks, Mr. Robert B. Marshall. Both Mr. Mather and Mr. Marshall have been for many years members of the Sierra Club, so that the club can take just pride in what they have accomplished. Work on the John Muir Trail is progressing, and before long the trail will be open to travel from Yosemite to Mount Whitney. This great work has already attracted nation-wide attention, and will do more to open up the high Sierra region than could be done in any other

way. The membership of the club showed some material falling off during the past year, owing to financial conditions, and also to the fact that a larger number than usual was dropped for non-payment of dues. The total membership on May 1, 1916, is 1796. There were 187 new members added during the year, and 270 names were removed from the list by reason of death, resignation, and non-payment of dues, leaving a net loss of 83 for the year. We have good reason to believe that the coming year will bring about a marked increase in the membership. We trust that each member will assist in securing new members when the annual blanks are sent out for recommendations. Respectfully,

WM. E. COLBY,
Secretary

NOTES AND CORRESPONDENCE

Edited by WILLIAM E. COLBY

THE JOHN MUIR TRAIL

With the remainder of the appropriation of $10,000 made in 1915 by the State of California, construction work was prosecuted on the John Muir Trail throughout the field season of 1916.

Progress within the Sequoia National Forest is well shown by Supervisor Wynne's report to the State Engineer, much of which is here quoted:

REPORT ON JOHN MUIR TRAIL WORK FOR SEASON OF 1916

SEQUOIA NATIONAL FOREST

The work for the season of 1916 was largely concentrated on the Sierra National Forest, using the remainder of the $10,000 unspent in 1915. A decision to handle the project in this way was reached at a conference in San Francisco early in the year, and this decision was afterwards approved by State Engineer Wilbur F. McClure. The work on the Sequoia National Forest was simply to be the completion of the work at Junction Pass and carrying the trail down Center Basin and as far toward Bullfrog Lake as funds would permit.

The Sierra Club used this route in its outing, and, in addition, there is much public interest in Junction Pass and numerous parties made the crossing during the summer. The pass has an elevation of 13,400 feet, being one of the highest on a main-traveled route in the Sierra. Several high peaks can be readily reached from it, notably Mount Keith and Junction Peak. From the Shepard-Tyndall Pass, Mount Williamson is but a moderately hard trip. It is only 117 feet lower than Mount Whitney, but its ascent requires more skillful mountaineering.

The work for 1915 ended about fifty feet beyond Junction Pass, on the Center Basin side, in a very bad mass of broken rock. Knowing that travel would be very heavy, it was planned to start work during the early part of June. Extraordinarily heavy snow made it impossible even to get into the area until June 27, and real crew work could not be done before July 4. Considerable trouble on the early work was occasioned by snow-blindness, and men were very hard to get and keep. Great credit is due to Thomas Adamson, the foreman, for continuing the work, even when single-handed. A little later conditions were better.

The trail is now completed in Class-A shape as far as Center Basin. It will take two or three seasons of settling in the talus and slides before the tread is permanently fixed, and money should be allotted for this purpose each year.

Costs were as follows:

Wages	$395.00
Subsistence supplies	191.26
Packing	8.00
Total	$594.26

In addition, $112 was expended by the Forest Service in salary and expenses on the Muir Trail project, chiefly in supervision and reconnaissance. The total length of completed trail is 3⅜ miles. In addition to outlay on the new trail, $54 was expended in shoveling snow and fixing up parts of last year's work that had been damaged by slides.

While the work was in both Ranger Slinkard's and Ranger Clingan's districts, it was considered admissible to concentrate the small amount of money available. Hence, this year's work was all under Ranger Slinkard, with Thomas Adamson, of Lone Pine, as foreman on the ground. District rangers are busy men, and both Clingan and Slinkard deserve great credit for the painstaking work on estimates for new construction. Ranger Slinkard should also be credited for keeping the work moving this summer in order to get the route open early, in spite of the excessive snowfall.

The general public has gained the erroneous idea that the Muir Trail is practically completed. This has caused many of them to comment very adversely on the trail, as many of the old portions of the route are little more than ways through. Money so far appropriated has simply been enough to build a few short pieces of the whole length. If the State of California can be prevailed upon to appropriate sufficient funds to really complete the entire project, the result will be a high-country line of travel without a parallel.

Several lateral trails will be needed to make Muir Trail accessible from side points. Owens Valley is particularly in favor with southern California people, and good laterals should be built from Lone Pine, Independence, and Bishop. There are trails from these points now, constructed by the Forest Service and cattlemen. Comparatively small amounts would place them in Class-A condition.

Good connecting links to the south and west will no doubt be constructed as funds are made available. Lateral trails from Mineral King and the Giant Forest should also be extended to the John Muir Trail. Possibly some of the roads to be constructed in the National Forests under the Taylor Bill will make the John Muir Trail more accessible.

Since the Muir Trail on the Sequoia National Forest is mainly a project yet to be completed, it was decided to spend considerable time in laying out the route and securing careful estimates of the cost. Following is a summary of the entire distance and costs of the various divisions as shown on the accompanying map:

Mount Whitney Division	7.5	miles		$1,875
Sand Meadow	" 5.0	"		875
Tyndall Creek	" 6.0	"		1,140
Bubbs Creek	" 7.0	"		1,050
Charlotte Creek	" 2.5	"		750
Glenn Pass	" 3.25	"		1,500
Rae Lake	" 7.0	"		950
Woods Creek	" 6.0	"		1,000
Pinchot Pass	" 3.5	"		1,325
Taboose	" 4.5	"		800
Upper Basin	" 3.5	"		950
Total	55.75	miles		$12,215

SUSPENSION BRIDGE ACROSS MIDDLE FORK OF KINGS RIVER AT SIMPSON MEADOWS

Constructed during 1916 by U. S. Forest Service

Photo by District Ranger Roy Boothe

North Palisade Mount Sill Middle Palisade

THE PALISADE GROUP FROM THE SOUTH
Photo by District Ranger Roy Boothe

These figures are the result of careful estimates by Rangers Clingan and Slinkard. I have also been over practically the entire route and agree that the figures are about right, as judged by our past experience in similar country.

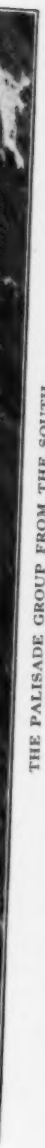
If in accordance with the desires of the State of California, I would recommend that the above amounts be expended on this project whenever funds are made available. I attach herewith topographic sheets showing the proposed route as outlined.

Respectfully submitted,

S. W. WYNNE,
Forest Supervisor

Hot Springs, California,
October 9, 1916.

On the Sierra National Forest the trail through the cañon of the Middle Fork of Kings River was completed from the mouth of Cartridge Creek to the mouth of Palisade Creek, a very difficult piece of construction. From the mouth of Palisade Creek it was continued up the Middle Fork to a point some two miles above Little Pete Meadow and about three miles from Muir Pass, where the trail will cross the Goddard Divide.



THE PALISADE GROUP FROM THE SOUTH
Photo by District Ranger Roy Boothe

This point was reached from the north in 1915, when the John Muir Trail was completed from the South Fork of San Joaquin River up Evolution Creek to Muir Pass; thus, only the length of three miles south from the pass to the point where work was discontinued on the Kings River side at the end of the present season remains to be completed. In order to accommodate the Sierra Club's outing party, which will cross the Goddard Divide early in the field season of 1917, Supervisor M. A. Benedict succeeded in having a preliminary trail constructed across the uncompleted three-mile stretch before weather conditions prevented further work.

The following information concerning work within the Sierra National Forest is given by Supervisor Benedict:

> I am enclosing a map showing the amount of work completed in 1916, and also showing the preliminary trail from the end of the completed work toward Muir Pass for the accommodation of the Sierra Club's outing party next July. At least three miles of this preliminary trail will be covered by snow when the Sierra Club party goes through, and I anticipate no trouble over the remainder of the trail to Barrier Rock, where the completed trail ends.
>
> The work was classified into three different types:
>
> Type A—Solid rock, from 10 per cent to 45 per cent slope.
>
> Type B—Talus.
>
> Type C—General type, including dry and wet meadows, talus covered with earth, flat solid rock, gravel and dirt slopes.
>
> Following is a tabulation of the work done under each type, and its cost:

Type	Feet	Man Days	Cost			Total, with Prorated Moving and Packing	Cost per Mile
			Labor	Powder	Subsistence		
A	810	145	$ 308.80	$ 90.00	$269.70	$ 837.54	$5,438.00
B	3,850	90	193.20	25.00	167.40	496.14	686.00
C	40,260	211	448.90	30.00	392.46	1,140.20	158.00
Preliminary trail.....	32,680	80	169.80	10.00	148.80	446.25	70.00
Cost, completed trail	44,920	446	950.90	145.00	829.56	2,473.81	264.00
Total	77,600	526	$1,120.70	$155.00	$978.36	$2,920.06	$211.00
Credits in Supplies and Equipment left over						400.00	
Total expended ..						$3,320.06	

Packing of equipment and supplies, prorated over work, $666.

8.5 miles, at $264.00 per mile.
6.2 miles, at 70.00 per mile.

14.7 miles, total.

Subsistence cost $1.68 per day per man, including cook, food, freight, and packing.

Our expense record shows—

State allotment	$4,900.00
Expended	3,320.06
Balance	$1,579.94

Supervision and labor, Forest Service, approximately $200.

Credits include—

Powder	$250.00
Steel and tools	30.00
Grub	100.00
Cook outfit	20.00
Total	$400.00

With the balance of a little over $1500 on hand, and with powder, tools, and camp equipment sufficient to run a crew almost the entire season, it is planned to start a twelve-man crew in Evolution Creek on July 1, 1917. This amount will run the crew at least a month, when it is hoped that a new appropriation by the state will be available.

I am very much interested in getting suggestions for a distinctive marker for this trail. Most of the country will not be through any timber where blazing can be done. My suggestion is the use of a three-foot length of asphaltum-dipped, three-quarter-inch iron

pipe, with a white disc six inches in diameter, with a black letter "M" stenciled on it; this stencil to be put on both sides of the disc. This marker can be placed at intervals not to exceed one hundred yards, and will make a permanent and distinctive guide. Of course, these will be supplemented by "ducks"; but "ducks" become destroyed by the elements and loose pack stock, and I believe some distinctive marker should be used, whether it is the one I have suggested or a better one. This marker, of course, will be supplemented by a large number of descriptive ones.

The work accomplished with the single appropriation of $10,000 which was made by the state legislature in 1915, has exceeded all expectations. With it a passable route along the entire crest of the High Sierra has been opened and some of the finest scenery in the United States has thus been made accessible. However, this passable route must not be understood to be a finished trail, for, indeed, much of it is only over the trails which already existed, and these without repairs or rebuilding of any kind. Some of this route which has been made passable is not even over the official route of the John Muir Trail. From the mouth of Palisade Creek the trail is yet to be constructed up Palisade Creek to the South Fork of Kings River and down the latter, via Woods Creek, Rae Lake, and Glenn Pass, to Bullfrog Lake. This section has been carefully explored, located, and estimated. Its construction now only awaits the necessary funds. Appropriations should be made by the state for continuing the work until the entire trail from Yosemite to Mount Whitney is completely constructed.

In addition to the John Muir Trail, lateral trails at frequent intervals are very desirable. With these the main trail would be easily accessible, and stretches of it could be visited by those who cannot afford the time to travel throughout its entire length.

* * *

Tehipite-Simpson Meadows Trail

A good trail through the cañon of the Middle Fork of Kings River from Tehipite Valley to Simpson Meadows has long been needed, but funds for improving the existing trail have heretofore not been available. The completion of the trail through the upper portion of the Middle Fork Cañon from Simpson Meadows to Palisade Creek and of the John Muir Trail from Palisade Creek across the Goddard Divide to the South Fork of San Joaquin River, during the past season, made this construction more necessary than ever before, as a trip which will no doubt be very popular will be through Tehipite Valley, the Middle Fork Cañon via Simpson Meadows, over Muir Pass, down Evolution Creek, and out through the basin of the San Joaquin River, or the reverse. In fact, it is this very route which will be followed by the 1917 outing of the Sierra Club.

Before the opening of the field season of 1916 the Directors of the Sierra Club brought the urgent need of rebuilding this trail to the atten-

tion of Chief Forester Henry S. Graves. There were also similar demands from individuals. Mr. Graves fully realized the need of this construction, and, although the funds at his disposal for such work are very limited, he made a special allotment of $1200, to which the Board of Supervisors of Fresno County added $400. With the money thus made available, a trail crew, under Supervisor M. A. Benedict, of the Sierra National Forest, repaired the existing trail on the north side of the river from Tehipite Valley to the ford, constructed an entirely new trail from the ford to Simpson Meadows, and at the latter point constructed a substantial suspension bridge across the Middle Fork of Kings River. The ford, which was formerly the only means of crossing the river, and which was at certain seasons dangerous, is now eliminated. The new location, entirely on the north side of the river, also avoids some rough trail across the mouths of several creeks which enter from the south wall of the cañon. This piece of trail work is certainly a welcome addition to the system of trails which is now being rapidly constructed to make the wonderful scenery of the basins of the Middle Fork of Kings River and of the South Fork of San Joaquin River accessible.

* * *

ESTIMATE OF COST OF NEW WORK TO COMPLETE A TRAIL FROM GIANT FOREST TO MORAINE LAKE

District Forester: October 4, 1916.

Dear Sir: Referring to your letter of August 12 and Mr. Huber's letter of August 11:

We looked over the prospective route from Bearpaw Meadow to Moraine Lake and found that this is a practicable route, except that the trail will have to swing onto the divide south of Deer Creek, then follow up Bear Creek. Following is Ranger Redstone's report on the piece from Bearpaw Meadow to the head of Big Arroyo:

> I found that the route down Deer Creek is impractical, owing to the precipitous drop of the narrow rocky creek bed. However. I found a very good route a few miles south of Deer Creek over the ridge between Deer Creek and North Fork or Bear Creek. This route would start at Bear Creek, cross the main Kaweah River, and ascend on a fifteen-per-cent grade around the ridge and up Bear Creek, crossing the divide near the head of Deer Creek and connecting with the trail up the Big Arroyo in the Nine Lakes basin. The country is exceedingly rough and a good trail will be costly. Two-thirds of the trail over the lower end will be fairly easy construction, composed of earth, heavily brush-covered, and of loose rock. The upper third will be very expensive, as it runs into heavy blasting and wall-building, especially near the crossing of the divide.

From the head of the Big Arroyo to Moraine Lake it is a fairly simple proposition, entailing no heavy construction, except about one and one-half miles in getting from the Arroyo to the plateau.

The appended sheet shows the estimated cost of the project.

Very truly yours,

S. W. WYNNE,
Forest Supervisor

ESTIMATE ON COST OF CONSTRUCTING A TRAIL FROM BEARPAW MEADOW TO BIG ARROYO

Two miles earth trail, covered with heavy brush and loose rock, some wall building and blasting, at $60 per mile	$120.00
Four miles earth trail, covered with brush and loose rock, at $40 per mile	160.00
Three miles rock work, walling up, blasting, at $200 per mile	600.00
One mile heavy blasting and rock walls at $500	500.00
Total cost for the ten miles	$1,380.00

TRAIL—HEAD OF BIG ARROYO TO MORAINE LAKE
LENGTH, ELEVEN MILES

Five and one-half miles clearing loose rock and some grading, at $40	$220.00
One and one-half miles, in slide-rock on grade, at $180.	270.00
Four miles, clearing loose rock and marking, at $30	120.00
	610.00
Total	$1,990.00

* * *

CLIMBING MOUNT CLARK FROM MERCED LAKE

Of all the splendid mountain peaks in the upper regions of Yosemite National Park, none can surpass Mount Clark in beauty of form. From whatever point it may be seen it is always the most striking feature of the landscape. From Glacier Point it looks like an isolated section of some huge palisade; from the Merced Lake trail it is seen as a thin sharp peak rising from slender buttresses; while from the Vogelsang Pass trail it appears as a fine pyramid. In any one of its many aspects it is an inspiring sight to the mountaineer.

Yet, notwithstanding its attractiveness and its nearness to Yosemite Valley, Mount Clark has not been ascended as often as one would suppose. The first ascent is a matter of classic record. Those who are familiar with Clarence King's *Mountaineering in the Sierra Nevada* will remember the thrilling account of the final leap that brought him

and his companion, Gardner, within reach of the summit. Like many a pioneer effort, this first attempt was a much more perilous adventure than subsequent ascents have proved. In 1866 the region around Mount Clark, or The Obelisk, as it was then usually called, was comparatively unknown, and King and Gardner had little opportunity to make careful plans for their route. The south side of the mountain was the most accessible, and from that direction animals could be brought to within a few miles of the base. They undoubtedly made a bad choice of routes for the final part of their ascent, as subsequent climbers have not encountered the extreme difficulties reported by King. Although most of the ascents have been made from the south side, a few climbers have reached the summit from the north. With the opening up of the Merced Lake region through the improvement of trails and the establishment of a public camp, the route from this side should become more popular. The climb can be made in a few hours from Merced Lake, and, if the way be carefully chosen, it can be made without danger or difficulty.

On the morning of July 4, 1916, I set out from the camp that had just been opened by the Desmond Park Service Company at Merced Lake, and crossing the river picked my way along the ledges of the opposite cliff. In a few minutes I could look down upon the sparkling waters of Merced Lake. After a climb of about a thousand feet I entered the forested tableland that flanks Mount Clark on the north. I had no intention of climbing the mountain that day, but only to reconnoiter and plan a route for some later day. Before me now lay the choice of following the basin toward the main snow-field or of mounting the ridge to the west. I chose the latter, and in a little while was on the summit of the ridge. The panorama was splendid; westward lay Yosemite Valley, reposing in the midst of the dark-forested upland; to the north and east the bright snow-fields of the upper Merced expanded to the Sierra crest; southward the ridge ran up to a sharp rocky point toward the main summit. Making my way along the ridge, I reached the rocky point in the course of an hour and looked down on the other side upon a snowy cirque that cut deep into the side of the mountain. Beyond the cirque towered the peak. It was a splendid sight; well worth a day's journey in itself.

The peak seemed very near, and I began to wonder if it were not possible to actually make the ascent this very day. The more I thought of it the more enthusiastic I became, and I looked eagerly for the most promising route. It seemed to be an easy matter to reach the main snow-field by descending a little way to the ridge which lay between it and the deep cirque. The snow-field must be crossed and the rocks beyond attained at as high a point as possible. There would remain some two or three hundred feet of rock-climbing. If the snow was not too steep and the rock-climbing too dangerous, the goal could be attained.

In a few minutes I was on the snow and found it softer and more deeply pitted than I had expected. While this made walking difficult it

also made it safe, and I was able to mount almost to the very head of the field before being forced to the rocks. I had chosen to cross the snow-field to the southeasterly side, intending to make the final climb along the left-hand sky-line. On reaching the rocks, however, this route looked very difficult for a man alone, so I began to prospect for a safer way. I had fully made up my mind to turn back if absolute safety was not assured. After a little investigation I found that there were several fairly wide ledges running at a slight angle across the face of the tower. I followed these along to the right, mounting occasionally from one to another until I was well around toward the westerly side of the peak. Mindful of King's adventure, I half expected to encounter some impossible stretch or to find myself in some *cul-de-sac* and perhaps be denied the summit when within a few feet of it. I knew that I was getting very near the top, but could not tell as yet just where it was. There might be a split summit, and I might be on the wrong side of the split. I wedged myself in between two large rocks and crawled up a little higher. Then I looked up, and there, only ten feet away, stood the cairn of rocks that marked the summit. In another moment I was on top.

The isolated position of Mount Clark gives it a commanding range over the whole Merced basin. Its precipitous sides make the glimpses of snow-fields, lakes, and forests far below most impressive. Yosemite Valley, lying deep in shadow, has an air of mystery, enhanced by the gleam of silver where the waters of Yosemite Creek pour silently into the dark chasm.

For an hour I enjoyed the superb prospect and then reluctantly prepared to descend. I returned by the same route as far as the snow-field, and then, abandoning my morning footsteps, followed the water-courses from the melting snow until I came to the timber-lands. Here I came upon the vestiges of a trail that appears on the maps as the Mount Clark Trail. I found it badly out of repair and almost obliterated in some places. It is very steep, and in its present condition not at all suited to animals. It reaches the river halfway between Lake Washburn and Merced Lake. From that point on it is plain walking into camp. I reached camp at five o'clock, having been gone about eight hours. The trip could be made very easily in less time by one familiar with the way.

Before leaving Merced Lake I climbed another mountain that should enjoy greater popularity. Mount Florence (12,507 feet) commands in some ways a finer view than Mount Clark. It is close to such spectacular peaks as Lyell, McClure, Rodgers, Electra, and Foerster, while just beyond are Banner, Ritter, and The Minarets. The view is similar to that from Lyell, though much more comprehensive, and the ascent is comparatively easy. The trip can be made in about ten hours from Merced Lake. The most direct route is to follow the McClure Fork trail up from the Merced until the Isberg Pass trail branches off. The Isberg Pass trail leads across a broad plateau that lies between Mount Flor-

ence and Lake Washburn. By this route the way is made easy for a considerable distance toward the mountain. Probably the best place to leave the trail is when it crosses a small stream that flows into Lake Washburn from the northeast. This stream comes from the snow-fields of Mount Florence and may be followed to its sources. From the snow-fields the way can hardly be mistaken. It is just a question of scrambling up over shale and great rough weather-beaten rocks. There is a false summit a few hundred feet from the real summit, but the traverse between them is easy. The north side of the mountain is a tremendous precipice, dropping to a vast snowy amphitheater that stretches toward the base of McClure.

FRANCIS PELOUBET FARQUHAR

* * *

FIRST ASCENT OF SOUTH GUARD (12,964 FEET)

On July 26, 1916, after leaving in camp at East Lake those of our fellow-knapsackers who were less strenuously inclined, or who were more ardent fishermen, Miss Florence Burrell, Miss Inezetta Holt, Mr. James Rennie, and the writer made the ascent of South Guard by following Ousel Creek to the unbroken snow-field of its upper basin, where, after finding the snow too solidly frozen to afford secure footing on the steep slopes (we had no ice-ax), we chose the rocky knife-edge extending to the summit from the northeast. This necessitated a long and arduous climb. The knife-edge is very thin, and is composed, for the most part, of very loose rock. Added to the interest of the climb was the uncertainty of whether this route would lead to the summit or whether a precipice would bar all further progress, an uncertainty which was not removed until the summit was actually reached about 12:30 P. M.

We found no evidence of any previous ascent of the peak. After building a small cairn of rocks on the larger block which constitutes the summit, we placed a record in a sardine-can, ate that part of our lunches which was left after the many stops on the long ascent, took a few moments with binoculars to watch a Sierra Club party which by now was descending Mount Brewer, and then began the descent.

As our party had planned to move camp from East Lake to Vidette Meadows, an additional eight-mile walk must be added to the return. To descend by the same knife-edge which we had utilized in the ascent would necessitate several hours of very careful and slow climbing. Surely this plan would permit darkness to overtake us long before reaching camp at Vidette Meadows. After a brief conference with Mr. Rennie, it was decided to try to find a place where we could cross the north face of the rocky knife-edge and descend to the snow, which we hoped would be softer by this time than we had found it in the early morning, and would afford a route for descending more rapidly. While the rest were crossing the first ledges of the north face more slowly, Mr. Rennie went ahead scouting and soon located a possible route. In following we crossed several narrow ledges and started some miniature avalanches in

MOUNT CLARK (11,506 FEET)
Showing route across the snow-field and to the summit
Photo by Francis P. Farquhar

MOUNT McCLURE AND MOUNT LYELL, FROM SUMMIT OF FLORENCE
Photo by Francis P. Farquhar

the loose rock, but finally all safely reached the rock directly above the edge of the snow-field.

The descent to the snow offered some difficulties, especially as that part of the snow-field directly under the cliff had been shaded throughout the day, was still frozen very hard, and was at a dangerous slope leading directly to some ugly rocks. With some assistance, all hands were finally safely on the snow-field beyond the point where a slide would mean striking rocks below. One of our party escaped a very uncomfortable slide from the spot where we first reached the icy snow only by the precaution which our pathfinder had taken to first dig very large footholds and to brace himself securely in these. Once at the point where snow-sliding was safe, rapid progress was made, both by voluntary and involuntary slides. At East Lake we shouldered our packs and finished an interesting day by tramping the remaining eight miles to Vidette Meadows.

WALTER L. HUBER

* * *

AN ASCENT OF TUNNABORA PEAK

On July 22, 1916, Mr. James Rennie and Mr. Walter L. Huber made the ascent of Tunnabora Peak (13,593 feet) from the Sierra Club's camp in the upper portion of Tyndall Creek Basin. The peak was reached by following the south branch of the East Fork of the Kern River to its head, thus reaching the south side of the peak which slopes to Tulainyo Lake. Although all other sides of the peak are very precipitous, the ascent from the south offers no difficulties after its inaccessibility has been overcome. The records of the Sierra Club indicated that no previous ascent of this peak had been made, but a very rusty tomato-can was discovered at the summit, and by subsequent correspondence it has been learned that Mr. George R. Davis, of the U. S. Geological Survey, made the ascent in August, 1905.

Tulainyo Lake, at the foot of its south slope, has a diameter of approximately half a mile and is at an elevation of 12,865 feet. This lake is in a rocky basin on the very crest of the Sierra. A sharp ridge of the main crest passes around it on the east and a less rugged ridge passes along its western side. It has no apparent outlet on either side. Its setting is unique among lakes of the High Sierra.

* * *

MAZAMA ACTIVITIES FOR THE PAST YEAR

In addition to their outdoor activities, the Mazama Club has established an educational course, begun last winter and continued during this one. This consists of a lecture by some competent person each Thursday evening on one of the following subjects, taken in rotation: Botany, Geology, Ornithology, and Local History. The lectures are usually illustrated with lantern-slides.

MOUNT McCLURE AND MOUNT LYELL, FROM SUMMIT OF FLORENCE
Photo by Francis P. Farquhar

The headquarters and club-rooms of the Mazamas in the Northwestern Bank building have now been maintained for two years. A single room with floor space of over 600 square feet is made to serve the various needs. This room, besides a fine collection of photo enlargements and other pictures of typical mountain scenery on the walls, is furnished as a club-room for both men and women.

The Mazamas' annual outing in August was taken to the Three Sisters group, a trio of peaks lying about seventy miles easterly from Eugene, Oregon, forming the summit of the Cascade Range. The attendance was the largest in recent years, the total reaching about 120, though not all of this number were in camp for the full two weeks. The climb of the three peaks and the explorations on attractive side-trips served to fully occupy the time. An unusual feature was a snowfall of several inches on the night of August 16th.

The third annual short outing to Mount Hood, covering the Fourth of July, was taken as usual, and two outings to the coast were taken during the season, as has been the case for several years past.

Death has made unusual inroads on the Mazama membership during the year, and several of our valued workers have been taken. Among these the most prominent was former President Prouty, whose achievements in mountain-climbing are known in the Pacific Northwest, and in Canada as well, and whose loss is greatly deplored.

WILLIAM P. HARDESTY

* * *

THE MOUNTAINEERS

During the past year The Mountaineers have conducted the customary series of local walks and short outings in the Cascades. Snoqualmie Lodge, built by the club in 1914, has become a favorite resort, offering a convenient base for climbing expeditions or the enjoyment of winter sports in season, particularly snow-shoeing and skiing. In the winter of 1915-16, remarkable for deep snows, the lodge was used by parties who were obliged to enter through a window in the gable, the only exposed corner.

The club has purchased seventy-four acres near Chico, in Kitsap County, one of the few regions in Washington where *Rhododendron californicum* grows abundantly. There is danger eventually of extermination because of wanton picking and the exportation of entire plants. The new Kitsap Lodge property will protect one of the most beautiful parts of this rhododendron land.

The annual outing of The Mountaineers was held August 5-27, near Mount Baker and Mount Shuksan, in the wildest section of the Cascades. Three different camps were made, three days at Twin Lakes, four at Hannegan Pass, and ten at Austin Pass. From the latter camp knapsack trips were made for the ascent of Mount Baker (10,750 feet) and Mount Shuksan (9038 feet). While not a very high peak, Mount

Shuksan is particularly difficult of ascent. Its steep sides are covered with sharp pinnacles, while the mountain itself is nearly inaccessible on account of deep gorges. Even when the lower portions have been conquered, the summit, a rock pinnacle of some 600 feet rising out of the snow-field, can apparently be scaled in but one place. The party that climbed it this year numbered twenty-eight. Thirty scaled Mount Baker, an all-snow climb over very steep and deeply crevassed slopes. On both mountains was left one of the bronze record tubes used by The Mountaineers. These have now been placed for general use on fourteen peaks in Washington.

WINONA BAILEY

Something over a year ago Mr. George E. Wright, vice-president of the Seattle Mountaineers, succeeded in interesting Stephen T. Mather, assistant to the Secretary of the Interior, in the erection of a shelter hut at Camp Muir on Mount Rainier. The movement had the support of Superintendent Reaburn of Mount Rainier National Park, and as a result $700 was set aside by the Government for the work. The hut has now been completed, following the plans drawn by Carl F. Gould, a member of The Mountaineers.

The *Tacoma News* of September 26 prints the following statement regarding the construction of the shelter:

> The house was built under the direction of Eugene Frank, who, with Fred Verville and Claude Tice, spent seventeen days and nights on the mountain, their experiences uniting the extremes in weather. Now they were almost carried away by arctic winds; then they were tanned to an Indian copper by an equatorial sun. They lived in a tent, pegged and weighted to the volcanic ash, and to their surprise they managed to retain this shelter, though the wind whipped it angrily. They could cook but little on their oil-stoves at that altitude.
>
> Seven barrels of lime and six barrels of cement were carried to Camp Muir, a little at a time, on the backs of burros. Sand was found on the camp-site—not very good sand, as it is mixed with volcanic ash, but Frank believes the cement that was made of it will stand for many a day. The house is 8 by 20 feet in size, and 7½ feet high inside. Its walls are three feet in thickness. Two by six beams sustain the roof, which is sheeted with timber and covered with tar paper, well nailed, and weighted down with stones. Supt. Reaburn set aside $700 for the work, but Frank completed it at a cost of $555. Each man was paid double wages, and they certainly earned them.
>
> Bunks for twelve persons will be built in the house. Blankets, oil-stoves, and food will be placed there. And the house is to have a telephone. Supt. Reaburn proposes to carry the wire to the camp early next season. Telephone service already covers the important points on the mountain. The line to Camp Muir will

be run in insulated coverings over the snow-fields and through iron pipe secured to the rocks.

* * *

BUREAU OF ASSOCIATED MOUNTAINEERING CLUBS OF NORTH AMERICA

During the summer of 1915, I visited the mountaineering clubs and geographical societies of the country and suggested the formation of an association for the furtherance of common aims, and for the establishment of headquarters in New York where mountaineering information might be collected and made available. The plan was outlined as follows:

It was proposed to form an association of clubs and societies, each of which shall co-operate through its secretary and transact its business by correspondence with the general secretary. Each club shall send its printed matter, which will be added to the collection of mountaineering literature established in the New York Public Library. An annual bulletin of information on the membership, officers, and activities of the leading organizations shall be issued. The secretary of each club will notify the general secretary of the movements of local members who have interesting slides, and who can address the members of the association at such times as they may be in different parts of the country.

One of the most important features of a club's activities is that of its library. Members shall be encouraged to read what is being done in the mountaineering world, for education in this direction is as essential to a true appreciation and enjoyment of mountaineering as is the work in the field. Copies of many of the new books in mountaineering will be sent to each club for review in its annual publication and bulletins, thereby materially assisting in the growth of its library.

It is believed that the existence of this association will have a valuable influence in many directions, and, occupying the field, its activities may expand as experience and occasion make desirable.

Meeting with a favorable response to the above ideas, I sent out a preliminary letter and received unofficial replies in approval of the plan. At the annual meeting of the American Alpine Club, held at the New York Public Library on January 8, 1916, I presented these letters and asked that the Councilors of the club be instructed to consider the plan and to send out an official letter to each club inviting it to become a member of the proposed association.

After due consideration, the Councilors of the American Alpine Club sent such a letter in March to the leading clubs, asking them to join in a Bureau of Associated Mountaineering Clubs of North America. Securing a majority of acceptances, they declared the plan in operation on May 2, 1916.

The first official act of the Bureau was the publication in May of a bulletin containing statistics of the membership, officers, and activities of the leading mountaineering clubs and geographical societies of the continent. The present membership of the Bureau comprises the following

LAKE CHELAN

HOTEL FIELD, HEAD OF LAKE CHELAN

organizations. (Some others await the annual meeting of their directors.)

American Alpine Club,
American Geographical Society,
Appalachian Mountain Club,
British Columbia Mountaineering Club,
Colorado Mountain Club,
Fresh Air Club,
Geographic Society of Chicago,
Geographical Society of Philadelphia,
Hawaiian Trail and Mountain Club,
Mazamas,
Mountaineers,
Prairie Club,
Sierra Club,
United States National Parks Service.

A valuable reference collection of mountaineering books has been formed by the New York Public Library in the main building at 476 Fifth Avenue, and we have secured the deposit of the library of the American Alpine Club. The combined collection promises to become one of the most important in existence. A collection of photographs and enlargements of mountain scenery in all parts of the world is also being made, and contributions of mounted or unmounted views will be appreciatively received.

LE ROY JEFFERS,
General Secretary

Through the Bureau of Associated Mountaineering Clubs our library has received the following new publications noted in the "Book Reviews": *The Mountain, Through Glacier Park, Blackfeet Tales, Rambles in the Vaudese Alps, Our American Wonderland, Chronicles of the White Mountains, Camping and Woodcraft,* and *A Thousand-Mile Walk to the Gulf.*

* * *

BEAUTIFUL LAKE CHELAN

From Wenatchee a branch of the Great Northern runs on up the Columbia River, and after an hour and a half reaches the station of Chelan. We got out here and took a motor which climbed like a goat (it wasn't a Ford, either) up the cliff wall some hundreds of feet and ran along through the dusty sagebrush beside the edge of a deep cañon where the blue Chelan River foamed and roared below, till we reached the town of Chelan, at the foot of the lake of that name. Perhaps you have heard of Lake Chelan. We, being parochial New Englanders, never had. It is, however, probably the most beautiful lake in America. In fact, we are disposed to back it against all comers, Crater, Geneva, Como, Louise

HOTEL FIELD, HEAD OF LAKE CHELAN

—any of them. It starts with apples, acres of orchards rising from the shore of the slopes of a low hill which is only a few hundred feet higher than Chocorua—apples and sagebrush and the gray dust from the roads. It runs for fifty miles northwest, never more than three miles wide, and ends in the heart of the high Cascades, amid snow-capped peaks and glaciers. The lake itself is 1800 feet deep, going down 400 feet below sea-level, and it is the blue of heaven, the blue of glacier ice when the sun shines through it, the deep marvelous green of reflected forest walls. There is no other lake like it, and, fortunately for the country, it is now, with its entire watershed, above the developed land at the lower end, a national forest.

You go up the lake by motor-boat. There is absolutely no other way to get to the far end. A road runs on either shore for a few miles till the hills close in, and then gives up. The view from the bow of the boat ten miles above the lower end is much like the view up the Hudson between Storm King and the Point, only the hills at Chelan are much higher, and far up the vista shine the snow-capped peaks of the Cascades. From here on the almost precipitous mountain walls, sparsely clad with fir, plunge directly into the lake—there is absolutely no beach whatever; and they steadily mount higher and higher till they begin to show snow. They are not broken into distinct summits, like the Rockies, but form a castellated wall attaining finally an altitude of over 8000 feet. For forty miles your boat sails between them. If you can imagine the Crawford Notch filled with blue water up above the level of the tracks, extended another twenty miles, and Willard and Willey raised to 8000 feet and snow-capped, you have Lake Chelan. The prospect is made still more lovely by the view across the head of the lake of the main ridge of the Cascades, with one or two glaciers showing.

There are two small but comfortable hotels at the farther end, and little else except primeval forest. After the lake ceases, if you wish to go farther up the cañon, you take horses at the Field Hotel and follow the Forest Rangers' road up the Stehekin River past Rainbow Falls, a beautiful straight fall of 360 feet, into the very heart of the Cascades. This trip can be made a camping trip of two, three, or more days, and will take you, if you wish, into wild horseshoe basins which make Tuckerman's Ravine look like a dimple, or over the high passes, the glaciers, and the snow-fields, where the world below is a wilderness of white-capped summits and wild gorges.

A "pass" in the Cascades is usually some 7000 or 8000 feet up. The summit cones are mere humps in the long ridges, and the passes go over the lofty cols. We went on a one-day trip up War Creek Pass, on horseback. The ranger's trail, clinging often to the sides of precipitous slopes, was just wide enough to give a trained horse footing. It mounted a shoulder of the northerly ridge, through forests of huge Douglas firs and magnificent gardens of lupine, Indian paint-brush, annual larkspur, dog-tooth violets, wild syringa, and scores of other flowers. It ran

into snow-patches at about the 6000-foot level, and finally crested the col at over 7000 feet. From this lofty col the long greenish-blue ribbon of the lake lay far below, and the world was a sea of peaks, including Glacier Peak and Mount Agnes to the southwest, both over 10,000 feet, and to the northwest, fifty miles away, the ice-capped summit of Mount Baker. We saw no mountain sheep that day, but coming down we ran through a herd of 2000 domestic sheep, being driven over the range to summer pasturage.

And we reached the hotel in time to go out behind to the Stehekin River and catch enough cut-throat trout for supper, trout weighing about three pounds. They catch Dolly Varden trout in the lake up to ten or twelve pounds. Nothing but trout live in this ice-cold water.

Unfortunately, it is a long way from the Eastern seaboard to Lake Chelan, and the lake is on a branch line from the through road at that. Nor is it a widely advertised national park, with Copley-Plaza hotels stuck down into the scenery. At present it is a spot for simple people who want one of the most beautiful combinations of water and mountain scenery in all the land, splendid fishing, and safe but rough trails into the heart of the high hills, with plenty of opportunity for uncharted mountain-climbing up secondary but by no means easy 8000- to 10,000-foot peaks. Some day Lake Chelan will take its place as one of the nation's famous scenic reservations. But we are glad we got there before the rush.

WALTER PRICHARD EATON

* * *

RECORD ON MOUNT KEITH

During the 1916 outing of the Sierra Club the ascent of Mount Keith (13,990 feet) was made by two parties of three members each. Both of these ascents were made from the John Muir Trail by traversing the knife-edge from Junction Pass, a route which has probably not been utilized in previous ascents.

The record on the summit, which is contained in the Sierra Club's Canister No. 29, was found to be in good condition. In it the following ascents are recorded: July 6, 1898, C. B. Bradley, J. C. Shinn, Jennie E. Price, and Robert M. Price; July 6, 1900, Helen M. Gompertz and J. N. Le Conte; August 20, 1909, Talbot C. Walker and Stanley H. Jones; July 25, 1910, C. W. Norton, Sherwood Norton, and Oscar S. Norton; July 23, 1916, Dr. H. B. Graham, E. G. Chamberlain, Agnes W. Vaille, Florence C. Burrell, Inezetta Holt, and Walter L. Huber.

* * *

ORIGIN OF NAME KINGS RIVER

In order to settle a question concerning the origin of the name Kings River, Mr. W. H. Spaulding, after some investigation, reports that in a volume entitled *Spanish and Indian Place Names in California*, by

Sanchez, at page 278, an account of the origin of the name is given. The river was named in 1805 by a Spanish exploring party, in honor of three wise men—"El Rio de los Santos Reyes" (The River of the Holy Kings). The account also includes a quotation from Gen. Fremont to the effect that he found the river called by the few Americans in California "Lake Fork," but that all of the Mexicans called the river "El Rio de los Reyes."

It appears that Mount King was named for Clarence King of the California Geological Survey.

* * *

Topographic Maps

The topographic map of the United States which is being prepared and issued by the United States Geological Survey, and with which most persons are familiar in the form of "atlas sheets" or "quadrangles," is now only about 40 per cent completed. At the present rate of progress, only about 0.8 per cent of the total area of the country is being mapped each year, and, with the revision which is necessary on maps already issued, nearly a century will be required for the completion of the work. At the suggestion of Professor W. M. Davis, Professor Emeritus of Geology, Harvard University, there has recently been formed a "Committee to Expedite the Completion of the Topographic Map of the United States." This committee proposes to do whatever it can to hasten the completion of the map and asks the aid of all interested parties.

The number of topographic engineers in this country who are qualified to do such mapping is limited; hence there cannot be indefinite expansion of the Survey's activities in this direction. But the present staff could be considerably increased if more funds were available for the work. Aid can be lent to the project by securing larger appropriations from Congress and from the legislatures of the states which are co-operating with the Survey.

The members of the Sierra Club make much use of the maps of the Survey, and should therefore be greatly interested in "expediting the map." Will not the members take it upon themselves individually to lend aid in this campaign by writing to their representatives in Congress asking for favorable consideration for the Survey's requests for appropriations? Further information can be secured by writing to Professor A. E. Burton, secretary of the committee, Massachusetts Institute of Technology, Boston, Massachusetts. Tracy I. Storer

* * *

Walking Trip Between Lake Tahoe and Yosemite

Any persons desirous of taking a two-weeks walking trip between Lake Tahoe and Yosemite, During July, August, or September, may find it of interest to communicate with Mr. and Mrs. Richard Michaelis, Corte Madera, Cal.

Memorial Exercises in Honor of John Muir

We are indebted to Mrs. Anna N. Kendall, a member of the outing party of 1911, for the following account of the exercises in honor of John Muir at the University of Wisconsin on December 6, when the bust by C. S. Pietro, given to the university by Thomas E. Brittingham, of Madison, was unveiled:

> *Dear Mr. Colby:* I am sending you the program of the exercises in honor of John Muir and the unveiling of the bust of him. I thought of you, one of his younger friends, as his older friends, comrades, schoolmates, and professors sat on the platform, some of them very old and very white of hair, but all voicing his praise most sincerely and genuinely, and certainly with deep affection and emotion. I wish their words could be printed in full, also that I had a photograph of the platform with the old men sitting and standing, all with the expression and attitude of loving remembrance of their old-time friend.

The program, after naming the speakers, concludes with a "Tribute" from Dr. S. Hall Young and this letter from John Burroughs:

> West Park, N. Y., Nov. 29.
>
> *Dear Sir:* I wish I could be with you on Dec. 6th when the University of Wisconsin proposes to do honor to the memory of one of its old pupils, John Muir; but the very serious illness of my wife and my own uncertain health will not permit me to enjoy that privilege.
>
> My affection and admiration for Muir were deep and genuine. When in his company I used to chafe a good deal under his biting Scotch wit and love of contradiction. He loved a verbal contest which was, with him, only another form of the trial of grit which in his school days he used to cheerfully submit to when two boys, armed with whips, used to stand up before each other and lay on till one of them cried enough. As I had never had that kind of Scotch discipline I did not keenly enjoy this sort of diversion. But his heart was all right, only he liked too well to mask its real kindliness in this way.
>
> He was a genuine student and lover of nature, and he has brought to us the message of the mountains as no other man has.
>
> In recently reading Emerson's Journals, I was struck and pleased with the fact that he places John Muir in the list of what he called "My Men." In said list the first is Thomas Carlyle, whom he first met in 1833, and the last is John Muir, whom he met in 1871. Muir's nature lore and his striking characteristics were bound to make an impression upon Emerson. He met no "mush of concession" when he met Muir. Muir tried to persuade him to quit his party for a night and go and camp with him in the woods, but Emerson's friends objected. Muir said Emerson had the "house habit." But Emerson looked upon himself then as an old man, though he was only 68.
>
> I am glad your university is to pay this tribute to its famous and beloved old student.
>
> With all good wishes, I am,
>
> Very sincerely yours,
>
> John Burroughs

Julius E. Olson, Esq.,
Madison, Wis.

Records of Sierran Animals in Magazine

Mr. W. E. Colby, Secretary Sierra Club.

Dear Mr. Colby: It occurs to me that a valuable addition to the club's annual magazine would be a record of the animals seen during the annual outings.

Some of the members who go on the trips could make the necessary notes and write up the articles, giving the dates, localities, descriptions, etc. The knapsack parties would naturally be the ones to see any deer, bear, or mountain sheep, and it would be well for this to appear in the magazine, giving more of a popular than a scientific write-up.

If I can be of any help in the premises, please call on me.

Yours very truly,

M. Hall McAllister

* * *

Everett Shepardson

Early in January the Sierra Club lost one of its most active members, Mr. Everett Shepardson, of Los Angeles. Mr. Shepardson has served on the executive committee of the Southern California Section ever since its organization, and was for three years its chairman. He was also an earnest worker on the Muir Lodge Committee. During the holidays, with a party of friends, he went on a knapsack trip into the mountains, where they were overtaken by a severe snow-storm, suffering great privation. Doubtless the exposure and attendant hardship contributed largely to his death. For many years he has been an enthusiastic member of the annual outings and will be sadly missed.

* * *

Kings River Cañon

Mrs. P. A. Kanawyer wishes to announce to her friends that she is still in the business of packing and outfitting for trips into Kings River Cañon and vicinity, and that her store and camp in the cañon will be open as usual in the summer. Her address is Dunlap, Cal.

NATIONAL PARK NOTES

TEXT OF THE NATIONAL PARK ACT

An Act to establish a National Park Service, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby created in the Department of the Interior a service to be called the National Park Service, which shall be under the charge of a director, who shall be appointed by the Secretary and who shall receive a salary of $4500 per annum. There shall also be appointed by the Secretary the following assistants and other employees at the salaries designated: One assistant director, at $2500 per annum; one chief clerk, at $2000 per annum; one draftsman, at $1800 per annum; one messenger, at $600 per annum; and, in addition thereto, such other employees as the Secretary of the Interior shall deem necessary: *Provided,* That not more than $8100 annually shall be expended for salaries of experts, assistants, and employees within the District of Columbia not herein specifically enumerated unless previously authorized by law. The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

SEC. 2. That the director shall, under the direction of the Secretary of the Interior, have the supervision, management, and control of the several national parks and national monuments which are now under the jurisdiction of the Department of the Interior, and of the Hot Springs Reservation in the State of Arkansas, and of such other national parks and reservations of like character as may be hereafter created by Congress: *Provided,* That in the supervision, management, and control of national monuments contiguous to national forests the Secretary of Agriculture may co-operate with said National Park Service to such extent as may be requested by the Secretary of the Interior.

SEC. 3. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the National Park Service, and any violations of any of the rules and regulations authorized by this Act shall be punished as provided for in section fifty of the Act entitled "An Act to codify and

amend the penal laws of the United States," approved March fourth, nineteen hundred and nine, as amended by section six of the Act of June twenty-fifth, nineteen hundred and ten (Thirty-sixth United States Statutes at Large, page eight hundred and fifty-seven). He may also, upon terms and conditions to be fixed by him, sell or dispose of timber in those cases where in his judgment the cutting of such timber is required in order to control the attacks of insects or diseases or otherwise conserve the scenery or the natural or historic objects in any such park, monument, or reservation. He may also provide in his discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations. He may also grant privileges, leases, and permits for the use of land for the accommodation of visitors in the various parks, monuments, or other reservations herein provided for, but for periods not exceeding twenty years; and no natural curiosities, wonders, or objects of interest shall be leased, rented, or granted to anyone on such terms as to interfere with free access to them by the public: *Provided, however,* That the Secretary of the Interior may, under such rules and regulations and on such terms as he may prescribe, grant the privilege to graze live-stock within any national park, monument, or reservation herein referred to when in his judgment such use is not detrimental to the primary purpose for which such park, monument, or reservation was created, except that this provision shall not apply to the Yellowstone National Park.

SEC. 4. That nothing in this Act contained shall affect or modify the provisions of the Act approved February fifteenth, nineteen hundred and one, entitled "An Act relating to rights of way through certain parks, reservations, and other public lands."

Approved, August 25, 1916.

* * *

REPORT OF ASSISTANT TO THE SECRETARY OF THE INTERIOR ON PROGRESS IN THE DEVELOPMENT OF NATIONAL PARKS FOR 1916

The report of Honorable Stephen T. Mather, Assistant to the Secretary of the Interior, covering the National Park situation for the past year should be read by everyone who wishes to keep in touch with the wonderful development which has been going on in the national parks under Mr. Mather's able supervision. For the benefit of the members of the Sierra Club, the following abstract of this report is made. This report is addressed to the Secretary of the Interior, Honorable Franklin K. Lane. Mr. Mather states at the outset that Mr. Lane had in mind the fact that the scenic features of this country were unsurpassed, and that American tourist travel should be induced to visit these parks not only during the great war, but after its conclusion. In order to accomplish this purpose, accommodations for visitors with both large and small incomes should be provided and means of travel to the parks and through the parks perfected. Mr. Mather was authorized to begin the develop-

ment of these parks "on a broad-gauge scale," and he has justified Secretary Lane's faith in his ability to undertake this great work. Mr. Mather very early selected Robert Sterling Yard to take charge of the campaign of public education, and all of our members are familiar with the beautiful *National Park Portfolio* which was only a part of the educational campaign. This was published through the co-operation of the Government with the railroads benefited by such advertising.

Publications all over the country were furnished with photographs and material descriptive of the parks, and the interest awakened has resulted in a great demand for the loan of photographs, motion pictures, lectures, etc., which the department is as yet unable to meet.

The increased travel to the parks during 1916 has fully justified this educational campaign, for the 1916 travel exceeded the travel of the year previous, in spite of the fact that the International Exposition at San Francisco was closed. In motor travel particularly was the increase noticeable; since 12,563 cars registered at the various parks in 1915, while 19,848 cars, carrying 78,916 tourists, registered in 1916. In the near future it is quite evident that the travel in private machines will constitute the greater portion of park travel, and as a consequence this necessitates the construction of new roads and the improving of those already existing. The revenue from this motor travel is also encouraging. In 1916, $65,311 was received from automobile fees, as against $42,589 in 1915 and $14,245 in 1914.

> Vigorous protests have been made against this direct tax on the motorist, but it must be maintained until larger appropriations are made for the construction and maintenance of roads suitable for motor traffic. Perhaps it should be continued indefinitely as a means of providing funds to repair the natural wear and tear on roads and bridges, the deterioration of which is unusually severe where they are used extensively by motor cars.

Mr. Mather feels that the policy of allowing automobiles in the national parks has been fully justified by the results.*

Mr. Mather points out the fact that Congress has largely increased its appropriations, showing that it responded to the popular interest in these parks. Over half a million was appropriated for the fiscal year 1917, as against a little over quarter of a million for the fiscal year 1916, and for the first time Congress provided for the care and protection of national monuments under the Department of the Interior, appropriating $21,500.

If Mr. Mather had done no other one act, the people of the United States would be deeply in his debt as a result of the recent purchase of the patented lands in the Giant Forest. These were lands in the Sequoia National Park in the immediate vicinity of Ranger Station and in the very heart of the forest, including some of the finest stands of the great sequoia. An option was secured from the owners for $70,000, and through Mr. Mather's efforts the sum of $50,000 was appropriated by

*In this connection it will be recalled that Mr. Muir and the Sierra Club approved of allowing automobiles to enter Yosemite National Park, realizing that it would mean a great increase in visitors.

Congress toward this purchase. In order to make up the balance, Mr. Mather secured the co-operation of the National Geographic Society, which generously and patriotically appropriated $20,000 out of its treasury, so that this splendid forest of monarchs might be preserved for all time.

NATIONAL PARK SERVICE

The crowning act of last year's administration of the parks was the creation of the National Park Service, of which Mr. Mather has the following to say:

> The special legislation of greatest importance was the passage of the National Park Service bill, providing for the establishment of a bureau in Washington to administer as a properly coordinated system all of the national parks and the national monuments under the jurisdiction of the Interior Department. This substitutes efficiency for the former haphazard consideration of each separate park by a small force in the office of the chief clerk of the department, already burdened with numerous other important duties.
>
> This measure provides for the appointment of a director and assistant director as the executive officers of the bureau and a small corps of clerks, stenographers, etc., all charged with the performance of duties relating solely to the administration and supervision of the national park system. It is an important step forward which renders possible the realization of the manifest destiny of our national parks as one economic asset.

NEW NATIONAL PARKS

Mr. Mather reports the creation of the new Lassen Volcanic National Park in California, and the Hawaii National Park, which embraces the craters of the three great volcanoes, Kilauea, Mauna Loa, and Haleakala, on the Hawaiian Islands.

The bill for the creation of Mount McKinley National Park in Alaska passed the Senate and is pending before the House. There is also a bill pending providing for the extension of the Rocky Mountain National Park. Recent Federal legislation following up state legislation has vested the Federal Government with exclusive jurisdiction in the Yellowstone, Mount Rainier, and Crater Lake national parks, and provision has been made for the United States Commissioners who will sit as local judges to punish violations of the rules and regulations. Mr. Mather points out the importance of having similar steps taken in connection with the parks in California and Colorado, but exclusive jurisdiction over these parks must first be ceded to the Federal Government by legislatures of these states.*

The Yellowstone, Yosemite, Mount Rainier, Sequoia, and General Grant parks have shown by the revenues of this last year that they are paying their own way as far as administrative cost is concerned, and when they have been thoroughly developed by proper roads and trails they ought to become self-supporting.

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*This is most desirable, and is something that the Sierra Club should work to accomplish as far as California is concerned.—*Editor.*

YELLOWSTONE NATIONAL PARK

The opening up of the Cody (or eastern) entrance to the park by railroad was accomplished this last year, and a fourth entrance on the south is planned. Automobile travel into the park was heavy during the season; 3445 automobiles, carrying 14,980 tourists, entered the park. All transportation lines in the park will be motorized, and the stage-horses will become things of the past. An important innovation was the removal of the Federal troops. These were replaced by a corps of civilian rangers selected from the officers and soldiers who had just been policing the park.

GLACIER NATIONAL PARK

Glacier was a very popular park last season, and satisfactory accommodations for the care of the tourist contributed largely to this popularity. In addition to the first-class hotels, chalets, and camps in existence, extensive additions to existing hotels are being planned. It is quite important that additional roads be built to open up the marvelously beautiful but less accessible regions of the park. By special arrangement, Mr. Mather has secured a splendid administrative site near the southern boundary of the park, which he has agreed to donate to the Government, and has secured the co-operation of the citizens of that vicinity, so that, if Congress makes the necessary appropriations, new administrative buildings will be constructed and the park entrance further improved in that vicinity.

> The appropriation of $110,000 for the protection and improvement of Glacier Park which was contained in the last sundry civil bill has enabled us to greatly improve the roads on the east side of the park, particularly the road in the Blackfeet Indian Reservation between Glacier Park Station and Divide Creek. Nearly $45,000 has been spent on this section during the past season.
>
> It has also made possible the construction of several new trails. Among these new trails are the Grinnell Glacier trail and the new trail between the Glacier Hotel and Avalanche Creek. The latter trail will be extended to Granite Park next spring, and when completed will be one of the most scenic trails in the park system. Shelter cabins of attractive design are also under construction at Triple Divide, Red Eagle Lake, Piegan Pass, and Iceberg Lake, and next season will welcome the hiker and other trail travelers when storms overtake them or when they find it desirable to break their trips for other purposes.
>
> An elaborate trail sign system is also being installed for the benefit of the hiker and independent tourist who chooses to ride over the trails without guide service. A trail map of the park is in contemplation as a further aid to the lover of the trails.

Mr. Mather has also reorganized the saddle-horse service, so that in the future there ought not to be any shortage of animals for the trail.

YOSEMITE'S GREAT DEVELOPMENT

A survey of the 1916 season in Yosemite National Park quickly and clearly defines three heads under which its development may be discussed. These are, first, new contracts covering large public-service

concessions; second, increased Federal appropriations for improvement and protection of the park; third, removal of restrictions on motor travel.

For many years the department unsuccessfully endeavored to induce parties with capital to undertake the construction of new hotels in the park, particularly on the floor of the valley. No individual or corporation could be interested in the park, and its future at the opening of the exposition season was dark indeed. Then D. J. Desmond, of San Francisco, general commissary contractor operating in all sections of the state, a young man already successful in business, a man of vision and immense energy, had the situation in the Yosemite brought to his attention. He saw its opportunities, and applied for a comprehensive concession covering the operation of hotel, camps, transportation service, stores, garages, etc.

This application was not granted to him at that time, but he was permitted to install and operate a new camp during the 1916 season with the understanding that if he rendered good service in his camp he would have a long-time concession. He built and operated the Yosemite Falls camp and gave his guests service of a high order. He more than met the conditions. Accordingly, the department entered into contracts with the Desmond Park Service Company, of which Mr. Desmond is president, covering the following: The erection of a hotel on the floor of the valley, to cost not less than $150,000; and another hotel at Glacier Point, to cost approximately $35,000; camps on the floor of the valley; lodges at various points in the higher parts of the park and along the Tioga road, which crosses the park at some distance from the rim of the gorge; the installation and operation of automobile transportation on all the roads of the park open to motor travel; the operation of trail transportation, and the construction and operation of stores, garages, etc.

The privileges granted in these contracts by their terms are to be exercised for a period of twenty years, and the department in consideration of granting these concessions receives annually during the first two years of the life of the contract 25 per cent of the net profits of the enterprise, and thereafter 50 per cent of the net profit. The net profit of the company is determined by deducting from the gross income 6 per cent on money invested in the enterprise, depreciation of equipment, buildings, etc., and expenses of operation, such as salaries, advertising, and insurance. It is provided, however, that, if this profit-sharing clause operates to the disadvantage of the department, it may elect at the end of two years to take 4 per cent of the gross income of the company instead of a share of the net profits.

Under this contract the Desmond Park Service Company erected, prior to the opening of the 1916 season, two camps on the floor of the valley, the Yosemite Falls camp and the El Capitan camp, and operated them during the season; also the Glacier Point hotel camp, and three new lodges at Lake Tenaya, Tuolumne Meadows, and Lake Merced; all of which proved popular because of the excellent accommodations and service rendered. New automobile stage service was established during

the season on the Mariposa and Chinquapin roads south of the valley, and on the Tioga road and Big Oak Flat road, as well as on the floor of the valley itself.

Furthermore, construction work on the new hotel at Glacier Point was undertaken, and is now nearing completion. On the Fourth of July ground was broken for the new hotel on the floor of the valley, and it is now in the course of erection. This building will be ready for the 1918 tourist season.

This outline of what the Desmond Park Service Company has already accomplished and has under way should leave no doubt in the mind of anyone that Yosemite National Park is well provided with excellent accommodations for its visitors, and that more and finer accommodations and highest-class hotel service are still to come.

Camp Curry, Camp Ahwahnee, and Camp Lost Arrow, long established in the Yosemite Valley, were operated this season under their managements of former years.

CONGRESSIONAL APPROPRIATIONS

Congress made a more liberal appropriation for Yosemite National Park for the fiscal year ending June 30, 1917, than for any previous period. This appropriation made available $250,000 for protection and improvement of the park. It was provided, however, that not more than $150,000 might be expended in the construction of a new hydroelectric power plant, and not more than $75,000 in regrading the El Portal road. There was nothing specifically appropriated for other roads in the park, but they were improved with revenue derived from concessions granted, automobile license fees, and from miscellaneous sources.

The new hydroelectric power plant was an absolute necessity, in view of the increasing demands for power, light, and heat for the park concessioners, and it was desirable that this demand be met by the Government because the sale of electric current meant a substantial revenue for the park. During the summer of 1913 the late Mr. Henry Floy, electrical engineer, of New York, and sometime inspector of the Interior Department, made a careful study of this hydroelectric power project, and it was largely his able presentation of the results of his study of this project before the Committee on Appropriations that gained for it favorable consideration. The new plant is now in the course of construction.

In general, it may be said that power plants, water and sanitation systems, and telephone lines in national parks should be owned and controlled by the Government. Their construction by the Government relieves the concessioner from the necessity of investing in these highly essential works and makes it possible for him to turn his capital into the further development of his own enterprise. Furthermore, as public works under the control of the National Park Service, they can always be made to yield a revenue.

The increase in motor travel was remarkable, and a comparison of the number of machines entering the park this season with the number reg-

istered during 1914 and 1915 constitutes the best index of the sound, substantial growth of the park's popularity. The records indicate that in 1914, 673 cars entered the park; in 1915, 3895; and in 1916, prior to October 12, 3938. This season 14,166 tourists entered the park in private machines. It is generally understood that automobile parties remain in the park a longer time than any other class of tourists. This is particularly true of those who visited the floor of the valley in their cars.

It has been indicated that the removal of restrictions on motor traffic is one of the important factors that has influenced park development during the season of 1916. Prior to this season no private machines were ever allowed to run on the floor of the valley, but the opening this season of these roads was largely responsible for the great influx of private cars and the extraordinary length of time spent by motorists in the park. Next season it is expected that motor travel will be double that of this season. This is a conservative estimate.

It is inevitable that for several years Yosemite Park will be just as popular with the motorists as Yellowstone, and yet the roads in this park are so inferior to those of Yellowstone that it is useless to compare them. Appropriations should be made at once to extensively improve the Tioga road and Big Oak Flat road, and to continue the regrading of the El Portal road. These highways should be put in as good condition as the state highways with which they connect. The Wawona road should also be improved, but this is a toll road, and until private interest in the same is extinguished and it becomes a public highway its reconstruction cannot be undertaken. The Wawona and Chinquapin toll roads are the only remaining roads in the national parks that are not under the control of the National Park Service. They constitute a constant source of administrative difficulty, and their private control is inconsistent with the best interests of the park. The additional cost of using this road, which the tourist traveling in his own conveyance has to bear, discourages travel via Fresno and Merced and other cities in their vicinity.

Dignified gateways should be constructed at the several entrances, particularly at the points where the Wawona, El Portal, and Tioga roads enter the park boundaries.

MOUNT RAINIER NATIONAL PARK

The Rainier National Park Company was granted a comprehensive concession, including the privilege of operating hotels, camps, transportation service, stores, and garages. A first-class hotel camp is under construction in Paradise Valley, and will be opened up for the season of 1917. This company also operates an automobile service between Tacoma and Seattle and various points in the park. On account of the exceedingly heavy winter, the season opened very late in the park last year. It is highly desirable that other sections of the park be opened up so as to make accessible the incomparable Spray and Moraine parks lying on the northern slope of the mountain. A road up the Carbon River would accomplish this purpose, and a survey has already been made.

CRATER LAKE NATIONAL PARK

Mr. Mather plans to completely reorganize the Crater Lake hotel concession. The construction of the scenic highway around the lake was continued.

SEQUOIA NATIONAL PARK

In Sequoia National Park the lack of roads and hotel accommodations, while not discouraging tourist travel particularly, has militated against the park's popularity. A new hotel or camp is a necessity, and it is essential that a new administrative building be erected and an adequate water system be installed in the Giant Forest; also that provision be made for the sanitation of the village in the forest.

As the Giant Forest is the scenic attraction of the park at the present time, and indeed the only accessible part, its improvement must have attention. The major portion of the trees in the Giant Forest grow on land held in private ownership, but, as has been stated, Congress has appropriated $50,000 and the National Geographic Society has advanced $20,000 to complete their purchase and revest title to them in the United States. Funds were also appropriated by Congress for a new bridge over the Marble Fork of the Kaweah River near the Giant Forest.

The new basis of compensation for privileges granted to the Mount Whitney Power & Electric Company in the park has netted the revenue fund more than $7000 during the past year. This fund is now just large enough to protect and administer the park. Appropriations for improvement only will be requested.

"THE GREATER SEQUOIA"

Senate bill 5913, introduced by Senator Phelan, and House bill 13168, by Representative Kent, providing for enlarging Sequoia National Park to include the Kings and Kern cañons and several miles of the crest of the Sierra Nevada, including Mount Whitney, are now pending in Congress, and will be considered in the short session which convenes in December. The early enactment of this legislation cannot be too strongly urged.

The public land proposed to be added to Sequoia National Park by these measures will never be valuable for any other than park purposes. Cattle are grazed on the mountain meadows during part of the year, but the administration of these meadows as part of the park will not interfere with the exercise of grazing privileges for many years to come. Small tracts of land here and there will be fenced for pasturage of livestock used by tourists.

Sequoia Park now has the giant sequoia trees as its one attraction, but if enlarged as proposed it will become a scenic park of as much distinction as that possessed by any other park in the system. Furthermore, it will become a game sanctuary of as much importance as the Yellowstone National Park.

GENERAL GRANT NATIONAL PARK

General Grant National Park had a 50-per-cent increase in the number of visitors this year. There has been a remarkable increase in travel to

this park since 1914. In that season 3735 visitors registered in the park, last year the number jumped to 10,523, and this year to 15,360; 8612 people entered this year in automobiles.

The fees from automobiles so increased the revenues of this park that it may now be administered without appropriations by Congress. However, an appropriation will be needed for a water system, a new ranger station, and other improvements that are absolutely essential.

ROCKY MOUNTAIN NATIONAL PARK

This park had more visitors than any other large scenic park during the past year, and the accommodations were taxed to their maximum capacity. Additions to the larger hotels will take care of this heavy travel next year. It is quite essential that the Government appropriate additional money for improvements in this park. A bill now pending before Congress provides for the addition of a number of scenic tracts which will bring the entire boundary of the park close to the city limits of Estes Park.

* * *

NATIONAL PARKS CONFERENCE

The National Parks Conference, held in the auditorium of the New National Museum, Washington, D. C., January 2 to 6, not only resulted in stimulating discussions of every phase of national park development, but also aroused unusual public interest. The evening sessions in particular, four of which were devoted to illustrated lectures on the parks, brought out such increasing crowds that on the final evening an overflow audience of between two and three hundred persons waited patiently for over an hour in an anteroom to hear the "Bear Stories" of Enos Mills, who generously repeated his talk for their benefit. We have not space even to enumerate the speakers, more than fifty men prominent in administrative, departmental, civic, and editorial work, men whose co-operation in this movement indicates the growing importance of the parks in national affairs. Talks by W. A. Welch, Chief Engineer of the Palisades Interstate Park, by J. B. Harkin, Commissioner of Dominion Parks, Canada, by Professor E. M. Lehnerts, of the University of Minnesota, and by Herbert Quick, the author, were especially significant. One session was devoted to "Motor Travel to the Parks," another to "Wild Animal Life," and another to "Recreational Use of National Parks." The names of such speakers as Henry S. Graves, Chief of the Forest Service, E. W. Nelson, Chief of the Biological Survey, Dr. Charles D. Walcott, Secretary of the Smithsonian Institution, Charles Sheldon, of the Boone and Crockett Club, Gilbert H. Grosvenor, Editor of the National Geographic Magazine, Huston Thompson, Jr., Assistant Attorney-General, and Mrs. John Dickinson Sherman, Conservation Chairman of the General Federation of Women's Clubs, indicate the scope of the conference and the broad, constructive policy of the National Park Service. The success of the conference was in great measure due to the untiring work of Mr. Robert Sterling Yard.

Report of Superintendent of National Parks for 1916

The annual report of the Superintendent of National Parks for the year 1916 contains a tremendous fund of information of vital interest and gives in detail the plans and accomplishments of the National Park Service. The following recommendations concerning the Ranger Service are particularly important:

> I strongly recommend that each member of the corps be appointed in the National Park Service, rather than as at present to the park in which they are to work, so that an employee in one park may be readily transferred to another park, where his training and experience make him more valuable to the Service.
>
> The ranger force in reality makes the success or failure in administering the parks, and I feel that there should be a civil-service examination to determine the educational qualifications of the rangers. While such an examination can not determine the most important requirements, temperament, tact, etc., it would give an assured fundamental base to build upon, and after one season's trial, before a permanent appointment was made, the department would know if the ranger had the desired all-around qualifications for the ranger corps.
>
> The longer a man is in the service the more valuable he is, and, therefore, I think a ranger should enter the service with the desire of making it his life's work, and after the service is once fully organized, promotions to higher positions should be made in the corps, so that each man would have the fullest incentive to give his best service, knowing that advancement would be based solely on character and general efficiency.

The suggestions concerning appropriations for road and trail construction are particularly pertinent and point out the tremendous waste that is certain to result from piecemeal appropriation. It is questionable if Congress can be induced to alter its "pork barrel" methods, which are diametrically opposed to the greatest efficiency and economy of expenditure. Mr. Marshall also points out the great need of sanitation and appropriate sewer systems in the various parks, which need is becoming doubly important because of the continually increasing travel.

Appended to this report are the reports of the various park supervisors. Particularly interesting to us is the report of Mr. W. B. Lewis, Supervisor of the Yosemite National Park. He points out the necessity for suitable bridges across the river, to take the place of those that no longer meet the existing requirements. He recommends the extension of the Washburn Lake trail to join the Isberg Pass trail, also a new trail from the McClure Fork of the Merced via Babcock and Emerick lakes over Tuolumne Pass, to take the place of the present trail over the much higher Vogelsang Pass. This is a most desirable change, as it will enable travel to pass from the Merced Lake region to Tuolumne Meadows much earlier and with much less effort than via the Vogelsang route.*

*We are informed that last fall a trail was built from Lake Tenaya via Magee Lake to the Tuolumne River and thence down to the Waterwheel Falls in the main Tuolumne Cañon. This is a splendid piece of work, and the trail should be continued on down the Tuolumne Cañon. However, members of the Sierra Club feel very strongly that a trail should first be built from the vicinity of Hardin Lake near the Tioga road down into Pate Valley, following the grade of the old Indian trail,

All of the reports of the various park supervisors will bear careful reading, and we recommend these comprehensive reports by Mr. Mather and Mr. Marshall as being the most convincing evidence of the great progress in national park affairs during the past year.

VISITORS TO PARKS, 1909 TO 1916

Name of park.	1909	1910	1911	1912	1913	1914	1915	1916
Hot Springs Reservation	(1)	120,000	130,000	135,000	[2] 135,000	[2] 125,000	[2] 115,000	118,740
Yellowstone National Park	32,545	19,575	23,054	22,970	24,929	20,250	51,895	35,849
Casa Grande Ruin	(1)	(1)	[2] 450	[2] 450	[2] 450	[2] 500	500	1,909
Sequoia National Park	854	2,407	3,114	2,923	3,823	4,667	7,847	10,780
Yosemite National Park	13,182	13,619	12,530	10,884	13,735	15,145	33,453	32,200
General Grant Nat'l Park	795	1,175	2,100	2,240	2,756	3,733	10,523	15,300
Mount Rainier Nat'l Park	5,968	8,000	10,206	8,946	13,501	15,038	35,166	22,969
Crater Lake National Park	4,171	5,000	[2] 4,500	5,235	6,253	7,096	11,371	12,285
Wind Cave National Park	3,216	3,387	3,887	3,199	3,988	3,592	2,817	9,000
Platt National Park	25,000	[2] 25,000	30,000	[2] 31,000	[2] 35,000	[2] 30,000	[2] 20,000	[2] 30,000
Sullys Hill Park	190	190	[2] 200	[2] 200	300	500	1,000	[2] 1,800
Mesa Verde National Park	165	250	206	230	280	502	663	1,285
Glacier National Park	.....	.....	[2] 4,000	6,257	12,138	14,168	14,365	12,939
Rocky Mountain National Park	.....	.....	.....	.....	.....	.....	[2] 31,000	[2] 51,000
Hawaii National Park	.....	.....	.....	.....	.....	.....	.....	(1)
Lassen Volcanic National Park	.....	.....	.....	.....	.....	.....	.....	(1)
Total	86,089	198,606	224,407	229,534	252,153	240,193	335,299	353,006

[1] No record. [2] Estimated.

AUTOMOBILE AND MOTORCYCLE LICENSES ISSUED, SEASONS OF 1914, 1915, AND 1916

	1914		1915		1916	
	Automobiles.	Motorcycles.	Automobiles.	Motorcycles.	Automobiles.	Motorcycles.
Yellowstone	.....	.....	958	.....	3,445	.....
Sequoia	155	.....	330	11	735	4
Yosemite	673	.....	3,895	.....	3,938	.....
General Grant	392	12	1,584	40	1,749	39
Mount Rainier	1,594	188	3,328	247	3,795	97
Crater Lake	1,107	18	2,015	31	3,000	26
Mesa Verde	34	4	86	.....	134	2
Glacier	267	4	457	26	902	11
Wind Cave	(1)	(1)	(1)	(1)	[2] 2,500	(1)
Total	4,225	226	12,563	355	19,848	179

[1] No record kept or estimate made. [2] Estimated.

crossing the Tuolumne River in Pate Valley, and continuing on out of Pate Valley to the north to a connection with the present Pleasant Valley—Rodgers Lake trail. This trail would enable parties to leave the Yosemite Valley and easily enter the northern portion of the park, which is now walled off from easy access by the Grand Cañon of the Tuolumne. The work of the city of San Francisco in Hetch-Hetchy Valley has removed the main opportunity for camping on the floor of the valley, and has rendered the crossing of the cañon at that point much less desirable. It is important that the route suggested through Pate Valley should be opened up at as early a date as possible, to take the place of the former route through Hetch-Hetchy, so that the northern portion of the park may become easily accessible from Yosemite Valley. This would have the double advantage of allowing persons to return via Tuolumne Meadows, thus making a round trip that can not be excelled, and will enable a trail to be started from Pate Valley up to the Tuolumne Cañon to meet the trail already commenced leading down from Tuolumne Meadows.—*Editor.*

FORESTRY NOTES

Edited by WALTER L. HUBER

EXTRACT FROM ANNUAL REPORT OF HON. DAVID F. HOUSTON, SECRETARY OF AGRICULTURE

RECREATION USE OF THE FORESTS

The use of the national forests for recreation purposes continues to extend. Thousands of local recreation centers, public picnic and camping grounds, excursion points, and amusement resorts are being developed. Some of the areas, located near enough to cities and towns to be reached by considerable numbers of persons, serve already the purposes of municipal recreation grounds and public parks. To meet local needs along this line, the department is co-operating with municipalities. These forms of public service can be rendered without difficulty in connection with the fulfillment of the general purposes of the forests.

NATIONAL FORESTS AND NATIONAL PARKS

The handling of the national forest recreation resources inevitably raises the question of the relation of the national forests and the national parks. At present there is no clear distinction in the public mind between the two. Both are administered for the benefit of the public along lines which overlap. The parks and forests occur side by side and have the same general physical characteristics—extensive areas of wild and rugged lands, for the most part timbered, with development conditioned upon road construction and similar provisions for public use. They differ chiefly in the fact that the attractions of the national parks from the recreational standpoint are more notable. Yet this is not always true. Several of the parks are inferior in their natural features to portions of the forests. The need of drawing a clear distinction between national parks and national forests and of a definite policy governing their relation is increasingly evident. Parks are being advocated where the land should stay in the forests, while elsewhere areas which should be made parks continue to be administered as forests—for example, the Grand Cañon of the Colorado.

A national park should be created only where there are scenic features of such outstanding importance for beauty or as natural marvels that they merit national recognition and protection and, on this account, have a public value transcending that of any material resources on the same land—such areas, for example, as those now comprised in the Yellowstone and Yosemite parks and in the Grand Cañon National Monument. The areas should be large enough to justify administration separate from the forests and the boundaries drawn so as not to include timber, grazing, or other resources the economic use of which is essential to the

upbuilding and industrial welfare of the country. In addition, when parks are created from parts of the forests, the portions remaining as forests should not be left in a form difficult or impossible to administer.

CLEAR-CUT POLICY NECESSARY

The importance of a clear-cut policy is evidenced by the efforts frequently made to secure the creation of national parks out of areas containing great bodies of timber, extensive grazing lands, and other resources, the withdrawal of which from use would be uneconomic and prejudicial to the local and general public interest. In most cases the desire for a specific park, where economic use of the resources also is essential, has led to the proposal for an administration of the area, after the creation of the park, identical with the present forest administration. Several such measures now are before Congress. Their enactment would result in a mere division of the public properties into parks and forests, having no distinction except in name; handled alike but by duplicate organizations in different departments. Still more serious is the fact that the cutting up of the forests would greatly cripple administration of the remaining lands. It would doubtless mean the abandonment of large areas which should remain under public ownership and control for timber production and watershed protection. It would greatly reduce efficiency in forest-fire protection and in the handling of current business, increase the expense of protection and administration, and cause endless confusion to users, who in many cases would have to deal with two departments in developing resources when, for instance, logging and grazing units overlap.

The protection of the scenic features and the development of the recreational use of the lands are being taken care of in the national forests. Some of the most unusual scenic areas in the forests are best suited to a full park administration. The bulk of the forest areas, however, should continue in their present status, where they will be fully protected and developed for recreation purposes as a part of the forest administration. The extensive road building, made possible by the $10,000,000 recently appropriated, will open them up rapidly.

An added cause of confusion is the fact that national parks and national forests are administered by two executive departments. While there is an effort to co-operate, nevertheless difficulties arise which could be wholly avoided if they were under one department. Unquestionably the administration of the forests should remain in the Department of Agriculture, because of the close relationship of the work of the Forest Service to the activities of other bureaus of the same department, such as the Bureau of Plant Industry, Bureau of Animal Industry, Office of Public Roads and Rural Engineering, Bureau of Soils, Bureau of Biological Survey, and the Bureau of Entomology. Obviously, there are in the forests many problems relating to live-stock, plant growth, predatory animal and insect control, soil conditions, and road and trail work. These great bureaus are directly and intimately concerned with these

problems. If the forests were transferred to another department, that department either would have to duplicate these bureaus in part or would have all the difficulties of co-operation with another department which seem to be inherent. Whether the National Park Service should be transferred to the Department of Agriculture is a matter for consideration. If the transfer should be made, it would be unnecessary and, in my judgment, unwise to consolidate the work of the two services. The park service should take its place in the organization of the department as an independent bureau, with its activities closely related to those of the Forest Service. Certainly, if the two services are to be administered by different departments, there should be the closest co-operation throughout. Such co-operation should include not only the question of the creation of new parks out of national forests, but also fire protection on contiguous properties, game preservation, road building, and other activities.

* * *

Recreation in the National Forests of California

During the season of 1916 the Forest Service distributed 90,000 recreation maps of nine national forests in California to those planning trips to these forests or to others interested. These maps, prepared by the Service, give detailed information about trails, roads, camping-places, supply-stations, resorts, and points of scenic interest, and also furnish concise histories and descriptions of the forests.

Fifteen thousand copies of the *Handbook for Campers in the National Forests in California* were also distributed. This is an interesting and useful pamphlet of forty-eight pages, prepared by the Forest Service. After a foreword, which explains the absence of restrictions on camping, hunting, and fishing in the national forests (except such restrictions upon hunting and fishing as are imposed by the state fish and game laws), a brief description of the forest areas of California and of each particular national forest is given. Some space is devoted to enumerating desirable clothing, camp equipment, and rations for camping in the national forests of California. Elaborate instructions are given in building campfires, in camp-cookery, in packing (including figures showing how to tie both the ranger-hitch and the bedding-hitch), in first aid in the case of accidents, in fire-fighting, and in the laws pertaining to fish and game, including a separate abstract of California fish and game laws, which is supplied by the State Fish and Game Commission. This interesting little pamphlet ends with useful miscellaneous information, varying from the care of chafed heels to instructions to persons lost in the California mountains.

The entire stock of both recreation maps and of campers' handbooks has now been exhausted, so great has been the demand for these. Unfortunately, the appropriation of the Forest Service is not sufficient to permit a new edition to be published at the present time. The members

of the Sierra Club can help to promote the recreation use of our splendid national forests by urging their Congressmen to have added to the next appropriation for the U. S. Department of Agriculture a special fund for this purpose.

* * *

Tahoe-Yosemite Trail

The following description of the Tahoe-Yosemite Trail Project is taken from a memorandum by District Forester Coert Du Bois:

The Tahoe-Yosemite Trail is a Forest Service project. . . . The purpose of the trail is entirely public. It is proposed to afford an easy and attractive route from the Lake Tahoe region to the boundary of the Yosemite National Park. Probably before it is completed the National Park authorities can be induced to complete the link between the head of Jack Main Cañon and Tuolumne Meadows, which when done will connect the Tahoe-Yosemite Trail with the John Muir Trail and make possible a pack-trip over a well-graded trail from Summit, on the Southern Pacific Railway, to Mount Whitney.

Instructions and specifications have been worked out in considerable detail and mimeographed, and copies will be placed in the hands of every officer or employee responsible in any way for construction or supervision on the trail. These specifications are in brief as follows:

1. *Grade*—Standard, 15 per cent; maximum, 20 per cent. Reverse grades allowable only when their avoidance would add 10 per cent to the cost.

2. *Clearing*—Standard, 3 feet; maximum, 5 feet. All brush piled for burning except through heavy brush-fields on steep sidehills with no openings, where the cost of piling and burning is clearly prohibitive.

3. *Tread*—Standard, 15 inches in solid ground; minimum, 12 inches; maximum, 24 inches.

4. *Drainage*—Waterbreaks when necessary.

5. *Corduroy*—When necessary over boggy places, embedded-log corduroy with sill will be used.

6. *Rock Walls*—Rock walls will be used where their construction is cheaper than blasting or digging the tread from the surface in place.

A distinctive sign-heading will be adopted for the Tahoe-Yosemite Trail. It is suggested that in addition to the name of the forest all signs along the trail carry the name of the trail. Direction signs will be needed wherever lateral or intersecting roads or trails are met; and distance signs throughout should give the distance and direction to the next camping-ground or fenced pasture. Signs should also indicate all points of topographic and historic interest, such as peaks, emigrant trails, etc. Signs giving the name of the watersheds left and entered should be at

all passes, and all creeks and lakes should be signed up with their proper names. Signs should be placed at county boundaries and at national forest boundaries. Signs should be placed at the points where the trail enters and leaves meadows. Where the trail crosses open country on the summit it must be indicated by ducks. It is suggested that a distinctive duck be developed, consisting, possibly, of three rocks about eight inches in diameter as a base and one rock about six inches in diameter on top. This will distinguish the Tahoe-Yosemite Trail from the innumerable trails through the high country.

I have a strong idea that such trails as the Tahoe-Yosemite Trail and John Muir Trail are going to be very popular in the future. Already every possible camping- and recreation-ground that can be reached with a Ford is getting overcrowded. The tendency is to get away from the crowd and take either a knapsack-trip or a pack-trip into the high country.

The project will not end with merely building a trail and putting proper signs along it. Properly fenced meadows must be supplied at very frequent intervals. I should say that horse-feed sufficient for at least ten horses for three nights should be available on the average for every three miles of trail. It is impossible to foresee where travelers will want to camp, and one camp-ground being occupied there should be another so close to it that the travelers will have no difficulty in going on to the next one. The ultimate development of the trail will include rest-houses and locators at the high points, similar to those installed on Mount Tamalpais.

The policy will be to work out this project gradually, concentrating the annual expenditures on the worst places and bringing each stretch worked upon up to the standard specifications as stated herein. Later on, the stretches which are now fairly good will be worked up to standard. There is no intention whatever of rushing this through to completion or making large expenditures on it immediately; but it is a job which the Service has undertaken, and which it is hoped very much will be carried through to satisfactory completion in a few years.

During the field season of 1916 an expenditure of $4990 was made on the Lake Tahoe section, where the trail was completed up Meeks Creek past the Talent Lakes to Velma Lakes. About four miles remains to be built to close the gap from Velma over Dick's Lake summit to Susie Lake. The trail is completed from Susie Lake to Desolation Valley with the exception of a very short stretch, and even this is passable for horses.

On the Stanislaus section $2020 was expended and the trail was completed from the head of Disaster Cañon to the east end of Iceberg, approximately six miles.

BOOK REVIEWS

Edited by MARION RANDALL PARSONS

"A THOUSAND-MILE WALK TO THE GULF"*

"Hungry and happy and hopeful" were his days at the University of Wisconsin, Mr. Muir tells us, when he bade it farewell to enter the "University of the Wilderness." Equally happy and hopeful, and even more hungry, were the days of his "Thousand-Mile Walk to the Gulf," the first of his more extended wilderness wanderings. In September, 1867, Mr. Muir started on his walk, through Kentucky and Tennessee and across a corner of North Carolina and all of Georgia to Savannah. There he took ship for Fernandina, a town on the border of Florida, and tramped across that "land of flowers" to Cedar Keys on the Gulf of Mexico, where he hoped to find a ship that would carry him to South America. In this disordered and lawless South of post-bellum days bands of guerillas threatened the whole country; a stranger was looked upon with suspicion and often given grudging hospitality; and hungry, desperate negroes lurked everywhere, ready to "kill a man for a dollar or two." Sometimes Mr. Muir lay out in the open in swamps, not daring even to light a fire for fear of drawing the attention of some marauder; often he walked fasting—"traveled today more than forty miles without dinner or supper" is one entry. It is hardly surprising, therefore, that he contracted the fever which might have ended his life, and which did materially change its whole course. On his recovery, he left Florida for Cuba, thence sailing for New York, and then by way of Panama to California.

This book may be said to form the second volume of Mr. Muir's autobiography, for it covers the period between *My Boyhood and Youth* and *My First Summer in the Sierra*. Dr. Badè has wisely included a California chapter—"Twenty-Hill Hollow"—not originally a part of the Florida journal, which makes the link complete. This delightful narrative is the first volume of his unrevised journals to be published since Mr. Muir's death, and it holds rich promise of literary treasures yet to come. The journal, however, cannot altogether be classed as "unrevised," for it bears the unmistakable stamp of Mr. Muir's more mature thought and style, even though the typewritten copy from which the material was principally drawn was little more than a first draft of the projected book. Mr. Muir often told me that he intended to turn his attention to the Florida journal immediately after the Alaska travels.

The book is full of charm and youthful enthusiasm, the register of a

* *A Thousand-Mile Walk to the Gulf*. By JOHN MUIR. Edited by William Frederic Badè. Houghton Mifflin Company, Boston and New York. 1916. Price, $2.50. Illustrated. Large paper edition, $5.00.

sensitive, alert mind, open to every new impression. He delighted to "ride over this unsullied country of ever-changing water," or to "cling to a small chip of a ship when the sea is rough, and long, comet-tailed streamers are blowing from the curled top of every wave." The California plains were "the floweriest piece of world I ever walked." Even the prosaic jack-rabbit seemed to him to move "swift and effortless as a bird shadow," and January weather "grows in beauty like a flower." He exulted in the winds, even those of Florida, though they "no longer came with the old home music gathered from open prairies and waving fields of oak, but passed over many a strange string."

The editor's work has been done with such sympathy that the whole book breathes of Mr. Muir's own personality, with no intrusive sense of an alien hand. Less happy, however, is the make-up of the volume. We regret that the clear-type, wide-margin pages could not have been given a more dignified outer dress, like that of the admirable large paper edition.

M. R. P.

* * *

"THE KLONDIKE CLAN"* One finds it rather difficult to characterize this book, whether it should be classed as a work of fiction or as a narrative of adventure. The author himself says of it: "The incidents are more history than fiction. The characters are types. . . . Many of the adventures of the story occurred under the personal observation of the author or that of his friends." We are inclined to feel that a simple narrative of personal experience would have been even more effective than this admirable romance of the Klondike stampede, especially after reading the author's earlier published book, *Alaska Days with John Muir*. When the reality is so rich in romance and heroism one feels that a really great book is lost to the world when a man of Mr. Young's qualities fails to give the simple, direct narrative of his Alaska experience. We hope that some such story of his many years of life and work there may yet appear.

To the lover of tales the book as it stands is more than worth while. The hardship, the humor, the folly, and the tragedy of gold-rush days are stirringly depicted. The characters are human and likable. We quote one story of a missionary's disastrous dependence upon an interpreter. The Parson had found some difficulty in explaining what sheep were like when he went over the text of the twenty-third Psalm with his interpreter, only succeeding after "Billy" had grasped the idea that they resembled the wild goats which the Indians hunted. "I noticed a queer look on the stolid faces of the natives as Billy interpreted my sermon," says the Parson, "but until I had learned the language myself I was ignorant of Billy's rendering of the verse. Here it is: 'The Great Chief above is the goat-hunter who hunts me. I do not want him. He shoots me down on the green grass and drags me down to the quiet sea-

* *The Klondike Clan.* A Tale of the Great Stampede. By S. HALL YOUNG. Fleming H. Revell Company. Price, $1.35 net. Illustrated.

beach.'" As one of the characters observes, "Mony is the meenister of the kirk who comes no nearer the sense of Scripture." M. R. P.

* * *

"THE TOURIST'S NORTHWEST"* A comprehensive guide-book of the northwest, giving modes of access to most of the mountain regions of Oregon, Washington, Idaho, and British Columbia, with detailed accounts of roads, railroads, and steamer routes, and many items of historical interest. The bulk of the book is given over to the scenic features and outdoor life, though cities and hotels are also touched upon. A splendid aid to travelers. Well illustrated with maps and photographs. M. R. P.

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"THE MOUNTAIN"† The book is well printed, artistic in appearance, and easy to read because of the beautiful type and wide margins. The topic scheme on the margin makes it easy for reference. Mr. Van Dyke is an artist in feeling and in the use of the English language. He is a word-painter *par excellence*. While the title of the book is *The Mountain*, and the descriptions are adequate, the heart of the writer is most at home in those scenes where he is dealing with the desert. It is in the desert description that he rises to his highest point of excellence. You feel the stretches of sand and the shimmering lazy sunshine, the dreaming hills that sweep toward the horizon, and the smell of sagebrush. You catch the fragrance of the desert air. The one word which would describe, possibly, better than any other Mr. Van Dyke's ability and method of description is *atmosphere*. It would be unfair to him to say that he does not know the mountains, or that he does not describe them adequately, for he does. He is a poet, and he sees everything through a poet's eyes. While he has climbed the snowy peaks and become acquainted with the terrors of the glacier, you somehow feel that he does not thrill with the joy that delights the intrepid climber who scales the precipitous heights and triumphs over difficulties which make up so large a part of the life of the adventurous mountaineer. He talks most familiarly of the Himalayas, the Alps, the Caucasus, the Rockies, or our own beloved Sierra, with equal facility, and he leaps from one to the other with the agility of a chamois. His pictures are always fascinating. He is a lover of nature. He loves the birds and the woods and the song of the winds, and he makes you realize that the mountains are not all made up of inaccessible peaks. While his viewpoint is not entirely that of an impressionist, he has beyond question the impressionistic tendency. You love the mountains better for having read him, but somehow you feel that his scientific explanations are not entirely satisfactory. In other words, Mr. Van Dyke is first, last, and al-

* *The Tourist's Northwest*. By RUTH KEDZIE WOOD, F. R. G. S. Dodd Mead & Company, New York, 1916. Price, $1.75. Illustrated.

† *The Mountain*. By JOHN C. VAN DYKE. Charles Scribner's Sons, New York, 1916. Price, $1.25.

ways an artist. His descriptions are full of color, full of sunshine, full of the flashing gleam of high mountain-tops, full of the roar of cataracts and waterfalls. He lacks the intimate knowledge of John Muir and the science of Joseph Le Conte, but his book in every way is worthy of consideration.

GEORGE C. THOMPSON

* *

"WILD LIFE IN THE ROCKY MOUNTAINS"*

Wild Life in the Rocky Mountains, by George Frederick Ruxton, is the story of the author's trip, during the winter of 1846-1847, from Chihuahua, Mexico, up along the Rio Grande to Pueblo, Colorado, where he spent a number of months in companionship with the mountain trappers and hunting in the "Bayou Salado." Thence, in May, 1847, in company with a wagon-train, he proceeded easterly to Fort Leavenworth, Kansas, and from there, by river steamer, train and boat, back to England, arriving in August. He returned again almost immediately to the wilds of the United States, only to die in St. Louis, in September, 1848, at the age of twenty-eight. The season of the year, the wild life and beauty of the country, the romance of the period, the danger of the undertaking, and his hairbreadth escapes, both from the severity of the weather and from scalping by the Indians, combine to make the interest of the book. The description of the blizzard in South Park, in which he spent the night kneeling in the snow with a saddle-blanket over his head and his head pressed to his knees, smoking a pipe which finally "caught fire and burned completely to the stem," his mules groaning aloud, falling down in the snow, and then again struggling on their legs, gives one a good picture of the wildness of the time as well as an insight into the character of the writer.

The descriptions of wild life are interesting, and in their number symbolic of the period. The buffalo, the grizzly bear, the elk, the bighorn, or mountain-sheep, the antelope, the wolf, the beaver, and even the little prairie-dog, are among the animals described with whom he seemed to have an intimate acquaintance. The book gives the atmosphere of the times and is well worth reading.

DAISY C. HUBER

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"CAMPING AND WOODCRAFT"†

"An encyclopedia of information on living in the open" is the publisher's foreword. There is a multiplicity of detail, somewhat bewildering both to the tenderfoot and to the seasoned camper, but very good to use as a reference in making selections. Rough and ready western mountaineers will not be likely to need many of the comforts suggested by Mr. Kephart, but any one of them will enjoy the capital skunk story told in the course of the narrative.

H. M. LE CONTE

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* *Wild Life in the Rocky Mountains.* By GEORGE FREDERICK RUXTON. Outing Publishing Company, New York, 1916. Price, $1.00.

† *Camping and Woodcraft.* By HORACE KEPHART. Outing Publishing Company, New York, 1916. Price, $1.50 net.

"CHRONICLES OF THE WHITE MOUNTAINS"*

A handsome volume of four hundred pages. Beginning with Indian lore and first settlements, then historical events, carrying the latter down to the present day, these first chapters give the pioneer mountaineer of the west a good idea of the value of preserving the slowly gathering mountain lore of our own region. The actual climbs and discoveries, as well as the summer and winter experiences, are linked with a long list of noted names, dear to all eastern climbers, and including the pioneer innkeepers who were largely instrumental in making the history of the Range. The founding, in 1876, of the Appalachian Mountain Club, at the call of Professor E. C. Pickering, and with Professor C. E. Fay in the chair, "marks the beginning of a new epoch in the exploration, study, and pleasure use of the White Mountains." The chapter on "Lumber Industry and Forestry" is the usual story of waste followed by intelligent conservation. Happily the Appalachian Club now owns and controls many of the beauty spots of the White Mountains. H. M. LE CONTE

* * *

"BLACKFEET TALES OF GLACIER NATIONAL PARK"†

In his *Blackfeet Tales of Glacier National Park* James Willard Schultz tells in diary form how, after a lapse of many years, he spends a summer wandering through Montana National Park with his old friends and foster-brothers, Yellow Wolf, Two Guns, Stabs-by-mistake, and Tail-feather-coming-over-the-hill. After days spent in hunting, moving camp, or religious ceremonies, the Indians entertain their white foster-brother by camp-fire legends of their tribe. We learn how "elk-dogs," or horses, were first given to man; we admire the skill and bravery of New Robe when he rescues his captive friend by running full speed over the seven freshly skinned buffalo-skulls; we are glad when the jealous wife drowns in the "swim of hate" which she had herself proposed to her unoffending rival; we can almost excuse the treachery of the Bad Wife, so plain is it that a sudden and overwhelming passion for the handsome stranger blinds her to all sense of right and wrong.

Coming, as they do, straight from the lips of the natives and couched in simple but picturesque phrase, these tales sparkle with a freshness and naïve charm that no one—not even the lover of the modern psychological novel—could resist. Here we have real and living men, women, and children—and, yes, even gods, who convince us of their existence by the way they talk and act, by the very force of the primitive passions which sway them, by the universality of their appeal. FLORENCE ATKINSON

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* *Chronicles of the White Mountains.* By FREDERICK W. KILBOURNE. Houghton Mifflin Company, Boston and New York, 1916. Price, $2.00 net. Illustrated.

† *Blackfeet Tales of Glacier National Park.* By JAMES WILLARD SCHULTZ. Houghton Mifflin Company, Boston and New York. 1916. Price, $2.00 net. Illustrated.

"YOSEMITE: AN ODE"*

The attractive manner in which Mr. Sterling's Ode is presented will at once commend it to all lovers of Yosemite. On the cover is an excellent reproduction of a painting by H. J. Breuer in which the artist has shown a welcome restraint, both in color and in drawing. Within are five well-chosen illustrations from photographs by W. E. Dassonville, each with a delightful note of its own. The first brings out the sweep of the great precipices and the vast depth of the valley; in the second the graceful beauty of Yosemite Falls is enhanced by the exquisite texture of meadow, river, tree, and cliff that surrounds it; next comes a view of Bridal Veil Falls, its pendent shaft of whiteness balanced by the dark column of a pine; the fourth illustration is a twilight study in strong lights and shadows, with a foreground of unusual beauty; and, lastly, the splendor and magnificence of Yosemite scenery is illustrated in a superb view of Half Dome at sunrise.

The poem, composed in a lofty and dignified style, is a tribute to the spirit of Beauty as exemplified in the various aspects of the incomparable valley. Many of the descriptive passages cannot fail to delight the "inward eye" of all who read, as when we are invited to

> "Ascend at dawn to that uplifted place
> Whence the doomed torrent, from its eyrie leaping,
> Takes virgin vesture and immortal grace.
> Beauty surpassing all!
> Splendor of whiteness, foam of pearls that crash
> To rainbow-mist on barriers immense!
> Iris and veils of amethyst that lash
> The eternal granite in magnificence!
> Can eyes behold you save with rapture wet,
> Or turn them from your glory and forget?"

It is not easy to rhapsodize on the grander aspects of natural scenery, and especially in Yosemite one is bound to feel the inadequacy of anything that poets may say. Acknowledging this at the very outset, the poet would nevertheless offer his tribute, humbly praying that through it there may be revealed to him

> "Some aspect of thine inner loveliness
> Or instant blaze
> Of sunlight on the marbles of thy truth."

F. P. F.

* * *

"ON ALPINE HEIGHTS AND BRITISH CRAGS"†

George D. Abraham, in his *On Alpine Heights and British Crags,* makes us acquainted with a series of climbing incidents in both Switzerland and Britain. For those in love with horripilant narrative no better book could be found. The author with his companions seems to ob-

* *Yosemite: an Ode.* By GEORGE STERLING. With a cover in color after the painting by H. J. Breuer and illustrations after photographs by W. E. Dassonville. A. M. Robertson, San Francisco, 1916. Price, 75 cents.

† *On Alpine Heights and British Crags.* By GEORGE D. ABRAHAM, author of the *Complete Mountaineer* (see SIERRA CLUB BULLETIN, Vol. VII, No. 1). Houghton Mifflin Company, Boston and New York. Price, $2.50 net. With 24 illustrations from photographs.

serve a high *pic* as a problem to be solved, and they proceed to the solution thereof with *scarpetti*, ropes, ice-axes, and a tremendous amount of faith and courage. Many an exciting incident befalls them. Yet by the constant use of wisdom no mishap must be recounted. Not only do they mount to the summits themselves, but, in spite of the objections of the guides, do they haul up in some miraculous manner a heavy photographic equipment. For this effort the reader may be grateful. The photographic reproductions are among the most remarkable to be found anywhere. The author's style is humorously thrilling—to witness: One day an opposition party was climbing the same peak. There had been an accident among the rivals. Stones drop ominously. A form like a human body comes bouncing downward—bump, bump! They are horrified to see the tell-tale trail of red on the white snow. At their very feet the body ceases to roll, and they recognize a huge ruck-sack with a broken flask of claret!

The second part of the book is on "British Crags." The tyro yearning for future success in Switzerland contents himself with sensational winter climbing when his fingers and toes are so frozen he can scarce clutch the tiny footholds and handholds. Next he betakes himself to the less better-known rocks of Wales. To read a list of Welsh proper names is in itself a dangerous excursion filled with pitfalls, crevices, *couloirs*, escarpments, ledges, slabs, buttresses, and other troubles. Come with me, then, to scale Cwm Cywion, Mynydd-Trwsgwl, Bwlch y Drws y Coet—from all accounts a most imposing group of rocks where one can have climbing equally as thrilling and healthy and thoughtful as any in Switzerland.

LENA REDINGTON CARLTON

* * *

"RAMBLES IN THE VAUDESE ALPS"*

Rambles in the Vaudese Alps consists of a month's climbing, botanically, in the valley of the Rhone at Gryon, not far from the famous St. Moritz. The author is most ardent in his scientific discoveries. His notes on the flora of the district and his observations on the habits of plants in general are chiefly of interest to botanists, particularly to English botanists, for his comparisons are ever with the conditions of the same plants as they grow in Britain. Aside from the science of the volume, there are, too, bits of life as seen in Switzerland—descriptions of the chalets with their eave-protected balconies, the flat-chested women and girls, knitting as they tend the family cow, the leaves drying about the doorstep, to be used for lighting winter fires, etc. But the reviewer feels that the scientific interest outweighs the travel interest. It would be a charming book to take with one should one be fortunate enough to make the same journey in the cantons of Vaud and Vallais.

LENA REDINGTON CARLTON

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* *Rambles in the Vaudese Alps*. By F. S. SALISBURY. E. P. Dutton & Co., publishers. $1.00 net. 152 pages. Eight full-page illustrations from photographs by Somerville Hastings.

"California Place Names of Indian Origin"* In his introduction to this very interesting list of Indian names, Professor Kroeber says: "The origin of many place names in California which are of Indian derivation is very imperfectly known, and has often been thoroughly misunderstood. There is no subject of information in which rumor and uncritical tradition hold fuller sway than in this field. The best literature dealing with the topic—and it is one of widespread interest—contains more errors than truths. The present compilation, in spite of probably embodying numerous misunderstandings and offering only doubt or ignorance on other points, is at least an attempt to approach the inquiry critically." Many names that are listed are of special interest to our readers, as may be seen from the following examples:

> Hetch Hetchy Valley, in the famous cañon on Tuolumne River, is named from a Central Miwok word denoting a kind of grass or plant with edible seeds abounding in the valley.
>
> Koip Peak, between Mono and Tuolumne counties, is probably, like near-by Kuna Peak, named from a Mono Indian word. *Koip* is "mountain sheep" in the closely related Northern Paiute dialect.
>
> Kuna Peak, between Tuolumne and Mono counties, is probably named from the Shoshonean word *kuna*, usually meaning "fire," but appearing in the Mono dialect of the vicinity with the signification of "firewood."

* * *

"The Book of Forestry"† *The Book of Forestry*, by F. F. Moon, covers the field in a brief, interesting, and non-technical way which is very acceptable to the general reader. Although written particularly for boys, it should prove of decided interest and value to older readers. Some of the topics considered are the meaning of forestry; the usefulness of forests; the life-story of the tree; the properties and uses of wood; the methods of raising, protecting, measuring, and harvesting crops of timber; the life of a forester; city forestry. Part II is a description of such characteristics of trees and of the various kinds of wood as are of help in identifying trees and commercial timbers. A glossary of technical terms is appended.

It is perhaps unfortunate that some of the statements are somewhat too dogmatic. For example, "Forestry is not agriculture, because agriculture has to do with tillable fields and level lands." If, as has been done, we define agriculture as the production of living things from the soil, then forestry is a part of agriculture. That this point of view is accepted by many is shown by the fact that so large a proportion of the managed forests of the world are administered by departments of agriculture. In points so open to argument, it would seem that it would have been well for the author to state both viewpoints.

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* *California Place Names of Indian Origin.* By A. L. Kroeber. University of California Publications in American Archæology and Ethnology, Vol. 12, No. 2, pp. 31-69. Price, 40 cents.

† *The Book of Forestry.* By Frederick Franklin Moon. D. Appleton & Co., New York and London. 1916. Price, $1.75. Illustrated.

The carelessness in making misleading or imperfectly explained statements, and in faulty proof-reading, which seems to be altogether too common in American books on forestry, appears again here to a slight extent, but not in nearly so pronounced a form as in some previous works. An example is the statement on page 196, that "the Sequoias are found *largely in California*"! The use of various equivalents for red fir and *Pseudotsuga taxifolia* must be confusing to the beginner. The author on page 290 states that red fir is *Abies magnifica*, on page 283 that red fir is *Pseudotsuga taxifolia*, and on page 195, in a description of *Pseudotsuga taxifolia*, the heading is "Oregon fir," and the same tree is referred to lower on the page as Douglas fir. All of these statements are in accordance with common usage, but without explanation they are confusing to the reader unfamiliar with the variation in the use of tree names. Some misprints occur.

It is also to be regretted that, probably because of the greatly increased cost of book-making, the book is rather poorly printed and does not make so favorable an impression as the price would lead one to expect. W. M.

* * *

"THE MOUNTAINEER" VOLUME IX* The Mountaineers' annual publication maintains the high standard of its predecessors. The Mountaineers' activities in 1916 were centered mainly about Mount Baker, and most of the articles in their annual are related in some way to this mountain. Mrs. L. R. Frazeur, well known to several Sierra Club outings, describes The Mountaineers' climbs last year of Mount Baker and Mount Shuksan. Charles Finley Easton contributes an interesting and valuable account of Mount Baker's glaciers. Other articles—on early explorations of Mount Baker, on Indian legends connected with the mountain, on the wild animals of the region, on neighboring points of scenic interest—complete a well-rounded survey of Mount Baker from the point of view of the mountain-lover's interests. *The Mountaineer* devotes considerable space to the activities of other mountaineering clubs—a valuable feature. A. H. A.

* * *

"THROUGH GLACIER PARK"† The first impulse of a normal Sierran upon reading Mrs. Mary Roberts Rinehart's little book will be to buy a ticket at the first opportunity for the Glacier National Park, in the hope of seeing the things which Mrs. Rinehart saw, and in the hope of meeting Howard Eaton. "Howard Eaton," says Mrs. Rinehart, "is extremely young. He was born quite a number of years ago, but what is that? He is a boy, and he takes an annual frolic. And because it means a cracking good time, he takes people with him and puts

* *The Mountaineer*, volume IX. Published by The Mountaineers, Seattle, December, 1916. 112 pages. Price, 50 cents. Illustrated.

† *Through Glacier Park: The Log of a Trip with Howard Eaton.* By MARY ROBERTS RINEHART. Houghton Mifflin Co., Boston and New York. 1916. Price, 75 cents. Illustrated.

horses under them and the fear of God in their hearts, and bacon and many other things, including beans, in their stomachs. . . . He is a hunter, a sportsman, and a splendid gentleman." Such was the guide who conducted the party of whom Mrs. Rinehart was one. It surely is a privilege to make a tour of Glacier Park with such a man.

Mrs. Rinehart does the tour justice; she enjoyed every minute of the three-hundred-mile trip, and she makes it enjoyable for others to read about. The book can be bought for a small price and read in a short time, and the return in enjoyment for the time and money invested in it will be just about one thousand per cent. A. H. A.

* * *

"ALASKAN GLACIER STUDIES"* The National Geographic Society published in 1914 the results of its explorations of glaciers in the Yakutat Bay, Prince William Sound, and Lower Copper River regions of Alaska. The field-work was done in 1909, 1910, 1911, and 1913, and the report is by Professor R. S. Tarr, formerly of Cornell University, and Professor Lawrence Martin, of the University of Wisconsin. It would be impossible to give an adequate account of this exhaustive report in the space available for this belated notice, nor would a thorough analysis of it be appropriate, perhaps, in this BULLETIN. Each glacier in the region named is studied in detail over a period of years, its activities measured and recorded, and fully described. The report is lavishly illustrated with half-tones and drawings, and with a set of nine excellent colored maps. A. H. A.

* * *

The Journal of Agriculture of the University of California has issued a special Forestry number which is extremely attractive and interesting. It contains seventeen excellent contributed articles from officials high in rank in the Federal service, from private lumbermen, from educators and others. It also contains some interesting notes of the Agricultural Department of the University of California.

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A book of *Songs of the Sierra Club* has been published, and is on sale at the club-room—price, ten cents, or, with postage, twelve cents. Our outing members will find in it many songs to recall camp-fire days.

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* *Alaskan Glacier Studies of the National Geographic Society. . . .* By RALPH STOCKMAN TARR and LAWRENCE MARTIN. The National Geographic Society, Washington. 1914. Illustrated.

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